# The Iron A

# A Review of the Hardware, Iron and Metal Trades.

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#### Henry Disston.

The announcement of the death of Henry The announcement of the death of Henry Disston, of Philadelphia, which occurred at his residence in that city on the 16th inst., was received with profound regret by all who appreciate sterling worth and successful enterprise, and with keen sorrow by a very large circle of personal friends and business acquaintances. Probably no American manufacturer was better or more favorably known at home and abroad than favorably known at home and abroad than Henry Disston, and none can claim to have done more to establish American industry on a broad and substantial basis than this industrious, energetic mechanic, who, in the face of difficulties so great that they would have discouraged ordinary men, attained a success for which it would be diffi-

cult to find a parallel.

Henry Disston was born in Tewkesbury, Henry Disston was born in rewardary, England, in 1810, and remained at home until 13 years of age, when he emigrated to America with his father, who died three days after their arrival in Philadelphia. Thus left to himself, the young man adopted the best course to insure success in life, and lacided to have a trade. Seiging the first the best course to insure success in life, and decided to learn a trade. Seizing the first opportunity, he bound himself as an apprentice to a saw maker. He served his employer faithfully, and when his time was out had enough saved from his earnings to begin business for himself in a small way, in a cellar near the corner of Arch and Second streets. He did all his own work, wheeling the first barrow-load of coal from Willow the first barrow-load of coal from Willow street wharf to his shop. The manufacture of hand saws had already been attempted by other makers, but with indifferent success and it seemed to have been reserved for Mr Disston to establish that important and useful branch of industry on a firm and enduring basis in this country. But this was not ac-complished without many severe trials and

struggles.

In order to prove to merchants that he was determined to compete with foreign makers, Mr. Disston was frequently compelled to sell his saws at an advance of only one per cent. over the cost of production; but their excellence gave them a wide reputation and in the year 1846, he removed his tation, and in the year 1846 he removed his small establishment and rented a room in the factory of Mr. William Miles, then situ-ated on a part of the site of the present works, at Front and Laurel streets. In 1849 he was burned out, and this event caused him to take up a lot adjoining, 60 by 150 feet, on which, in the space of 10 days, his first factory, 30 by 60 feet, and four stories high, was erected, and formed the nucleus of the present extensive and famous establishment. Since that time the business has grown steadily and rapidly. Before the war it was customary for American saw makers not only to depend upon English sources of sup-ply in steel, but to return to England the scrap for remanufacture. Mr. Disston, how-ever, soon recognized the needlessness of this, and about 20 years ago he decided to this, and about 20 years ago he decided to manufacture his scrap into billets and roll therefrom the saw plates. This was attended with great profit during the war, and he soon extended his business to include the production of cast steel. The works on Laurel street, Philadelphia, where the steel is made, and the steel parts of tools are formed, cover eight acres of ground, and are filled with machinery for perfecting the are filled with machinery for perfecting the processes of manufacture and reducing cost. Mr. Disston's inventive skill and knowledge of what was needed, enabled him to devise or introduce many new forms of teeth for saws, designed for special kinds of work, and "combination tools," which are so useful that they find a ready sale, particularly in new countries.

In considering the nature and conditions

to remember, what is now nearly forgotten, that the prejudice of American consumers in favor of English steel was so great as to place many obstacles in the way of success in its production. The prejudice against domestic steel as a material for saws was especially strong, and notwithstanding the well-known and admitted excellence of his saws, Mr. Disston was for several years compelled to conceal the fact that he made them from steel of his own manufacture; and it was not until the good quality of American steel was established beyond question that the fact

In connection with saws the firm of Henry Disston & Sons undertook the manufacture of various specialties in the way of cutting tools and steel implements, such as cane knives, trowels, moulding tools, &c. At Tacony there are branch works, where files, both machine and hand-cut, and the brassand woodwork for the other tools manufactured. The file works were are manufactured. are manufactured. The file works were established originally to supply the saw works with files, but a demand soon sprang up for them, and large quantities are now made for the general market. The variety of the manufactures enabled the firm to make one of the finest and most valuable displays of steel tools in the Centennial Exhibition. The magnitude of the works is shown by the fact that in 1876 there were 1200 men employed, and the saw works alone were capable of making five tons of saws per

Mr. Disston was gifted with a natural mechanical genius, and during his long and busy life he invented and adapted many valuable improvements which have done which have done

the means to improve it, and the handicraft the means to improve it, and the handicraft skill to do the manual work necessary to carry his own device into effect. He had other qualities quite as essential to the great mechanic. He was industrious, hopeful and persevering; confident that superiority of workmanship must win success; satisfied that he could turn out superior work, and resolute in the endeavor to make his tools the best of their kind. He had one other priceless quality: he was not above doing priceless quality: he was not above doing with his own hands any of the labor incident with his own names any of the labor incident to his trade. There were no mystories in-volved in Mr. Disston's success. He worked his own way through and out of difficulties and discouragements, developed to the full-est extent his opportunities, and pushed steadily forward with but one ambition in steadily forward with but one ambition in life—a great, permanent and honorable success in his business. To him everything else was secondary to this. It is doubtful if he ever sought or expected wealth until it came to him naturally as an incident of

of Mr. William Disston, now learning the trade, he will conduct it in the progressive and skillful manner which has characterized its management during the past 30 years. We have reason to know that the pride of name is strong in these gentlemen, and that the world-wide reputation of the father will be jealously guarded by the sons.

adopted at any time that money can be made

supervision of the establishment, is a saw dishonest. As a result the bankrupt courts for a friend, who shortly failed. The man supervision of the establishment, is a saw maker by trade, having served a regular apprenticeship to the business and worked his way up to his present position from the anvil. We are able to say from personal knowledge that this gentleman is thoroughly familiar with every detail of the great business established by his father, and that with the aid of his brothers, Messrs. Albert H. and Horace C. Disston, partners, and later of Mr. William Disston, now learning the discover the weak points of the law and learn to take advantage of them.

The demoralizing effect of these frequent failures"—a thing that not long since looked upon as neighbor to a crime—could not, a few years back, have been estimated, but which is now recognized as liable to assume any proportions and shake the whole basis of business credit; and although the dishonesty of many of the cases is so apparent as to throw a doubt upon all others, yet the story is so oft repeated that men have ceased to speculate upon it, and gradually come to recognize in it a custom to be adopted at any time that money can be made due he had everything beyon. I the reach of attachment, and went through the prescribed course of bankruptcy as serenely as a sum-

mer morning.

Besides the class of bankrupts who are forced there by creditors and those who file petitions voluntarily, either through a real pressure of circumstances or desire to escape such condition by saving for themselves a nice, large portion of this world's goods— property belonging to their creditors—there is a large class of people who, it seems, have regularly embarked in the bankruptcy busiregularly embarked in the bankruptcy business, and have negotiations always on the carpet either for going into business or "compromising" with creditors, and the wonder still remains that these people ever have creditors; but it seems this peculiar class never has any trouble in that regard. From the rapid manner in which this class is growing in numbers, influence and opulence there seems to be millions in it. The method adopted is very simple, and only requires a small capital with which to indicate a large one and an easy assurance of beara large one and an easy assurance of bearing. Goods are usually bought at a distance, business is carried on as long as possible with the disbursement of as little money as possible further than is necessary to make appear-ance. When payment is insisted upon by the largest creditors and no more time can the largest creditors and no more time can be gained by any possible manner, then a compromise is offered, and as the creditors are principally at a distance, and while there are a good many of them, their ac-counts not being large enough to warrant any additional expense in regard to what is at best uncertain, they generally accept. Should they force him into bankruptcy, our accomplished business man still remains Should they force him into bankruptey, our accomplished business man still remains master of the situation. He knows all the "short cuts," and while a non-professional would be still in the slough of despond he is smiling back at the susceptible drummer, making arrangements for a new stock; richer than he was but not more ready to new.

richer than he was, but not more ready to pay.

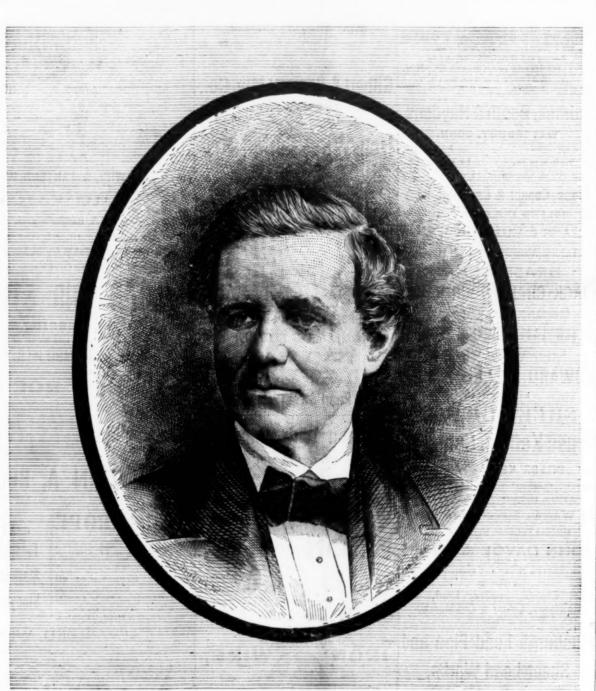
Not the least among the annoyances and loss to which the victims of the law are subject is the latitude given the receiver or assignee—positions that are generally filled by representative men who might be exby representative men who might be expected to settle the affairs intrusted to them with all possible dispatch; and yet the dilatoriness with which these matters are attended to has become proverbial. Instances have been given us where the assignees of large estates that went down in the grand crash of 1873 have not yet paid one

the grand crash of 1873 have not yet paid one cent against the estate, though handling \$50,000 and \$60,000 of its money, simply, as they say, "because the affairs are not yet fully settled up."

Another very unique instance will suffice just to index the variety possibilities of this law. The circumstances as they happened, as we are told, were in brief about as follows: A firm consisting of a man and his lows: A firm, consisting of a man and his nephew, were carrying on an extensive business when they became somewhat embarrassed. They at once decided to go into bankruptcy, but in order that the business might not be interrupted, and nothing lost that the six new terms of the six new terms and the six new terms are sensible to the six new terms and the six new terms are sensible to the six new terms and the six new terms are sensible to the six new terms and the six new terms are sensible to the six new terms and the six new terms are sensible to the six new terms and the six new terms are sensible to the six new terms and the six new terms are sensible to the six new terms and the six new terms and the six new terms are sensible to the six new terms and the six new terms are sensible to the six new terms and the six new terms are sensible to the six new terms and the six new terms are sensible to the six new terms and the six new terms are sensible to the six new terms are sens ment to save, they decided to go through the mill one at a time. Accordingly the nephew transferred his share of the business to his partner, made safe disposition of his other effects, and upon the expiration of the six months, during which the law stipulates there shall be no transfers of property previ-ous to filing the petition, the petition was filed, granted, and the young man permitted to pay a few cents on the dollar in order to balance his accounts with his creditors. Shortly after he had gotten safely through he was admitted again to his former business, his property was transferred back to him and he and his uncle obtained a contract which netted them a large sum of money. The uncle then transferred all his propert to the nephew, and at the expiration of six months' limit he went into bankruptcy, got through by paying little or nothing, his property was transferred back to him by his nephew, and both are now comfortably fixed with no creditors to molest or make

them afraid. Each day of the brief existence of the present bankrupt law has shown its defects to have greatly the advantage of its capabili-ties for good. If the Legislature has any remedy for all this evil it certainly should

apply it at once. Ice did not become an article of commerce until the present century; but already in the United States alone \$30,000,000 are invested are fulfilled, the moral obligations do not appear to trouble many, and the even tenor in the business of gathering and selling it. of their way is scarcely interrupted. An instance, which was stated as common, was given by a prominent bank official of the ease with which a formerly respectable business man evaded the payment of an obligation of the payment of an obligation of the payment of the payment of an obligation of the payment of the payment of an obligation of the payment of the payme



others.

Personally, Mr. Disston was a man to of trifling with him or presuming upon his good nature. He exacted fidelity on the part of all who served him, but was so kind and considerate as an employer that every workman looked upon him as a personal friend. There are few large overtaken by uncontrollable circumstances

exhibited in many ways, and in nothing has alas! "to what base uses," &c. That such this been shown more strongly than in the means which he adopted for the perpetuation of the business when he should no longer be able to give it his supervision. His plored, but it is none the less a fact. In its more here allowed the realistic properties and the such that with special vectors with special vectors.

his business success; and when it came he knew how to employ it judiciously and liberally for his own good and the good of country, and the remedies if found should example to them. Thus the pernicious effects knew how to employ it judiciously and of are not confined to any section of the liberally for his own good and the good of country, and the remedies if found should be made of universal application:

It is understood that the Legislature will whom success would have been possible in any department of productive industry. Practical in all things and self-reliant, he also of the bankrupt law for the purpose of corwhom success would have been possible in any department of productive industry. Introduced, to commence a general dissection Practical in all things and self-reliant, he also of the bankrupt law for the purpose of corpossessed exceptional executive ability, and surrounded himself with men calculated to fill subordinate positions to the best advantage. Hale, hearty and jovial, he it was framed perhaps the law has no fault; was always popular, but no one thought its defects lie in its susceptibility of importance the easy way it throws one for the posture-the easy way it throws open for the

shirking of honest debts.

A law that bears upon its face only the sign of mercy—shaped and framed for the ostensible purpose of befriending such as are as a personal Frence. There are few large establishments in the country where a better feeling existed between master and men, or where less was thought or said about the conflict of capital and labor.

The forethought of Mr. Disston has been tablish his credit when and how he can. But much to make a reputation for American teols. He had the faculty of observing sons have been educated with special reference to this end. Mr. Hamilton Disston, upon machine was defective; the genius to devise machine was defective; the genius to devise machine was defective; the genius to devise much to make a reputation for American ger be able to give it his supervision. His plored, but it is none the less a fact. In its mission of leniency to the really unfortunate, with full there is no means of distinguishing and barmachine was defective; the genius to devise when in late years has devolved the general much to make a reputation for American ger be able to give it his supervision. His plored, but it is none the less a fact. In its mission of leniency to the really unfortunate, where is no means of distinguishing and barmachine was defective; the genius to devise when it is none the less a fact. In its mission of leniency to the really unfortunate, where is no means of distinguishing and barmachine was defective; the genius to devise where it is none the less a fact. In its mission of leniency to the really unfortunate, where is no means of distinguishing and barmachine was defective; the genius to devise where it is none the less a fact. In its mess man evaded the payment of an obligation to the really unfortunate, where is no means of distinguishing and barmachine was defective; the genius to devise where it is none the less a fact. In its mess man evaded the payment of an obligation to the really unfortunate, where it is none the less a fact. In its mess man evaded the payment of an obligation to the really unfortunate, where it is none the less a fact. In its mess man evaded the payment of an obligation to the really unfortunate, where it is none the less a fact. In its mess man evaded the payment of an obligation to the really unfortunate, where it is none the less a fact. In its mess man evaded the payment of an obligation to the really unfortunate, where the payment of an obligation to the really unfo

of a really good law reached not only to have no scruples about taking advantage of any means of making money but its unhealthy influence is felt from pit to dome of society. The interest awakened by the recent dis-

cussion of the subject by the Chamber of Commerce, and the proposed action of the Legislature, induced a *Leader* reporter to visit several bank officials and others, and ascertain exactly how the matter was looked upon. Said one: "The evil effects of the law are so many that I consider it one of the greatest curses of the community. stances were given in numbers of its outrageous abuse, and in many cases by persons standing high in public opinion, and not ma-terially lessened by the circumstance. So long, it seems, as the conditions of the law

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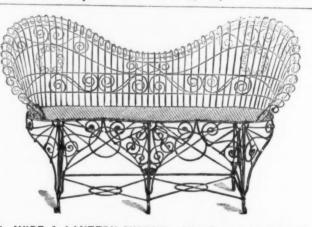
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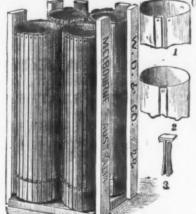
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#### New Patents.

We take the following abstract of new patents from the official record: STOVE PLATFORM.

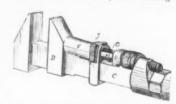
To W. W. Wadsworth, New York, N. Y. Nov. 20.—In a sheet metal stove platform



a bead or rib around the edge of the same, filled with a plastic non-combustible sub-stance, which is secured in its place by the edge of the platform, which is turned over it. WRENCH.

To C. H. Covell, Stockton, Cal.—Nov. 20.

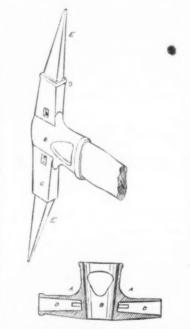
1. The mutilated nut J, surrounding the



stem G, and having the angular corner stop R, in combination with the spring P.

2. The movable jaw D and sleeve F, with the nut J, in combination with the stem G, having the adjusting thread and nut T, the guide U, and bar C.

To J. L. Woolley, Boulder, Cal.—Nov. 20.—The points may be reversed on their axis

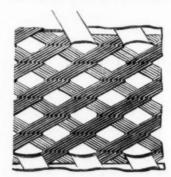


and secured in position, thereby projecting the points proper in different directions to suit the work to be performed.

The combination, with the socket piece or head A, having eye B and rectangular sockets D, of the pick-points E, beveled on one side and reversible on their axis.

WIRE BELTING.

To C. W. Sturmberg, Elberfeld, Prussia.— Nov. 27.—1. A wire belt constructed of a



series of transverse strands, each bent to a zigzag shape, and the whole interlaced, and either with or without an edge-facing of leather or similar material.

2. A wire belt constructed of a series of

To W. H. Taylor, Stamford, Conn.—Nov. 27.—1. A ring for a lock, provided with a



central key aperture, in which the key will

rails were produced upon terms which secured them a ready market in the United States; but Mr. Halliday and Mr. Macdonald set to work, labor became disorganized, impatient of control, and unamenable to reason; and while South Welsh ironworkers reason; and while South Welsh ironworkers and ironmasters were quarreling among themselves, the Americans began to make rails on their own account, and, with the help of heavy tariffs inposed by Congress on foreign iron entering the United States, they have now practically driven British iron from American markets. We do not wish to be too despondent, but we cannot ignore the fact that eminent authorities on wish to be too despondent, but we cannot ignore the fact that eminent authorities on these matters like Mr. Menelaus, of the Dowlais Works, and Mr. Williams, of Bolckow, Vaughan & Co. (Limited), are stated to have expressed their opinion that the iron rail trade of South Wales has gone from the district forever. The further fact must also be mentioned that the shareholders of the Nanty-Glo and Blaina Ironworks. must also be mentioned that the shareholders of the Nant-y-Glo and Blaina Ironworks Company (Limited) have authorized the directors to break up the ironworks of the company, to sell the fixed plant of the works, and to cease to carry on the trade of ironmasters. Such a policy as this may possibly be premature, but at any rate the opinion of Dowlais and the action of Nant-y-Glo point to the conclusion that the railway iron trade of South Wales is gone forever.—London Mining Journal.

#### Ores of the New Iron District of Ohio.

To the Editor of The Iron Age: A writer in The Iron Age of March 7th, on the iron ores and coals of Kentucky, has seen proper to make some statements as to the quantity and quality of the ores of the new iron region of Ohio that are so entirely destitute of fact as to deserve notice. He says "the ores are nearly all less than I foot thick, and analysis shows them often very lean and ores are nearly all less than I foot thick, and analysis shows them often very lean and quite high in phosphorus." There is not a single seam mined in the district less than I foot thick. The thinnest seam mined being the "Baird."

The "Iron Point" ore, which supplies four furnaces at Shawnee, has a maximum thickness of 5 feet, and an average at that place of 2½ feet on 150 acres. The same seam at Moxahala reaches a thickness of 7 feet, and on 100 acres of that company's lands an average of 6 feet with a maximum of 13

The "Buchtel" at the Akron Furnace, lying between the "Baird" and "Iron Point," is from 2 to 6 feet thick and underlies thousands of acres, and is opened at the outcrop over a widely extended area.

the outcrop over a widely extended area. The Iron Point ore yields from 50 to 60 per cent. after calcining, the others from 35 to 50 per cent. Each loses in weight about 15 per cent. by the ordinary mode of calcining. The same writer uses the estimates of a somewhat unfriendly correspondent, to show comparative cost of making iron in the Hocking district with his own "paper estimates" as to probable cost in Western Kentucky. It may have escaped his attention that in the Hocking estimates used, labor and repairs are placed at \$4\$ per ton, while that in the Hocking estimates used, labor and repairs are placed at \$4 per ton, while the Kentucky furnaceman is expected to get along with \$3 for the same items. He also adds transportation to Louisville, apparently unaware of the fact that a very small proportion of the furnace product is really sent to city brokers to find a market, but is shipped on their orders directly from the furnaces to consumers, and that the Hocking district is much nearer the center of the area of consumption (and as well sup-Hocking district is much nearer the center of the area of consumption (and as well supplied with railroad facilities for transportation) than the Kentucky metropolis, and is really a better distributing point than that to which he proposes to consign his product. That there are valuable ores and coals in the "dark and bloody ground" of Kentucky it is not my purpose to question, but comparisons are odious.

The following statement of quantity and cost of material to produce a ton of pig metal is from the working of the Fannie No. 2 at Shawnee for the past three weeks, and is entirely reliable in those respects. The furnace is making 23 tons per day:

The furnace is making 23 tons per day

Kentucky estimate for labor and repairs. \$9.80 In this district it is customary to add 

It is not intended that the about transverse strands, arranged in groups or sets, each bent to a zigzag shape, and the whole interlaced, either with or without an edge-facing of leather or similar material.

DRAWER LOCK.

The W. M. Company of the stranger of the set of the se for a year. The yield of the ore is above the average results, and the cost of the ore nearly double that of some of the furnaces where the yield is less. The above figures have none of the elements of a "paper esti-mate," but are a simple statement of fact, without regard to what may, might, ought to or could be done in iron making in the Hocking region or also where and girls they Hocking region or elsewhere; and right here it seems pertinent to say that, in the opinion of your correspondent, when it ceases to be profitable to make iron in the Hocking district there will be no new furnace ventures in other localities. In regard to the ore supply of this district, the absurdity of the statements of writers unfamiliar with the central key aperture, in which the key will trict there will be no new furnace ventures turn loosely to spread and disengage the tumblers, having lugs to be struck by the key-bits to turn the ring concentrically with the key after the tumblers have been disengaged by the partial rotation of the key, and having a cam or talon on its periphery tengage with and throw the bolt.

The combination with the helt and leaves the form of the key are the contains 4000 tons per acre for each foot in thickness, or that two acres of the "Iron Point" is "the following the contains the c having a cam or talon on its periphery to engage with and throw the bolt.

2. In combination with the bolt and spreading tumblers of a key-lock, a ring provided with a central key-aperture and a cam and lugs, substantially as specified, and arranged to oscillate concentrically with the rotation of the key after the tumblers have been spread and disengaged.

3. A non-rotating nosing or key-barrel of a lock adapted for a sheet-metal key, counterbored to form an annular internal projecting ledge, c, integral with the barrel, to support the external disk d, and notched on opposite sides.

The Welsh Iren Rail Trade.—The stern question which now awaits consideration is whether the iron rail trade of South Wales is not gone forever. Formerly South Welsh

Fron.

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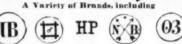
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### Report to Lloyd's on Steel for Boiler

Brown & Co. and Messrs. C. Cammell & Co., Sheffield, and of the Bolton Iron and Co., Sheffield, and of the Bolton Iron and Steel Company, Bolton, the engineering and steel works of the London and Northwestern Railway Company, at Crewe, where over 1000 locomotives had been constructed of steel, and the boiler-making establishments of Messrs. Hicks, Hargreaves and Co., Bolton, at which steel plates to the extent of from 5000 to 6000 tons have been employed in the construction of extricolar ployed in the construction of stationary boilers, and of Mr. T. Beeley, of Hyde Junction, who makes on an average about three tion, who makes on an average about three boilers per week of this material. At each of these works we were received with the greatest courtesy, and every facility was afforded us of obtaining information on the whitest of our invariance.

subject of our inquiries.

The methods adopted in the manufacture of mild steel by the Bessemer and Siemens-Martin processes, which have already been fully reported upon, are such as practically to insure the production of a material perfectly reliable, so far as regards its uniformity in tensile strengths, and its power to withstand certain bending tests. The limit of elasticity of this material bears about the same relation to its ultimate strength as in ordinery wrought iron, but subject of our inquiries. strength as in ordinary wrought iron, but the elongation or stretch under stresses pro-portional to the ultimate strengths is greater

mend that plates used in the construction of the furnaces and combustion chambers be with steel than with iron, a fact which should not be lost sight of in forming an estimation of the strength of boilers. At first sight it recommends itself by its tensile strength, malleability and ductility, and also by its freedom from laminations and blisters as eminently suited for the construction not only of the shells and stays but also of the furnaces and combustion chambers of the furnaces and combustion chambers of the furnaces and combustion as a material it opinion of Dr. Siemens and other authorities, of the furnaces and combustion chambers of marine boilers. But while as a material it opinion of Dr. Siemens and other authorities, the material of which the rivets are made should be very mild steel, the tensile strength possesses in a special degree these high qualities, it is found that they become seriously impaired by its being subjected to the processes usually occurring in boiler making, not exceeding 26 tons per square inch. It is also needful to heat them uniformly throughand it is necessary to exercise the greatest out their entire length, and not to raise the out their entire length, and not to raise the points to a higher temperature than the heads, as is the usual practice with iron rivets, and they should not be heated be-yond a bright red heat. When these pre-cautions are taken, steel rivets will be found to subsequently employ special means in order to restore them. The simple process of shearing affects to some extent the tensile to resist steady strains and also jars and con-

strength of the plate operated upon, and a considerable portion of its strength is lost by ussions much better than iron rivets.

It has been observed in many of the experipunching. It is contended, however, and indeed it may be said to be placed beyond doubt, that the loss thus occasioned is fully ments made on the tensile strength of this material, that the specimens failed by crippling behind the pins, and also in the cases of the tests of riveted seams made on the Tyne, the opening of joint at a low stress seems to recovered by the plates being annealed after they have been sheared or punched, and it is the practice at almost all the steel manube due to the crippling of the material behind the rivets. It would therefore appear that is the practice at almost all the steel manufactories we have visited to anneal every plate after it is sheared and before being sent out of the works. We are also informed by Dr. C. W. Siemens, F. R. S., that at the Landore Steel Works every plate supplied a greater proportion of bearing surface is required with steel than with iron. As the strength of rivet steel bears a less ratio to that of the plates than ordinary iron rivets do to iron plates, it is probable that it will be found necessary to use a slightly larger area of rivet compared with the section of the plate than is the case with Landore Steel Works every plate supplied for boiler making purposes is annealed after being sheared to size. It may be well here to remark that this annealing is not, as is frequently supposed, a process of some difficulty, requiring great care and considerable time in the operation. It consists simply of heating the plates to a low red heat—which allows the particles that have been strained or disturbed by the working of the material to resume their normal condition—and then cooling them uniformly.

section of the plate than is the case with iron. This is a question to be decided by direct experiments, and the course adopted by the committee in requiring a specimen of the longitudinal seam of the shell to be pulled asunder, when sanctioning the reduction in scantlings of the steel boilers now being constructed, will afford some reliable data on this point. We failed to obtain any defined results regarding the strength of mild rivet steel to resist shearing.

One of the experiments made on the Tyne was with a steel and an iron box of about 2 feet 6 inches square, stayed so as to represent the combustion chamber of the boiler, and which were tested by hydraulic pressure to destruction. They were carefully gauged at various pressures, and the results clearly cooling them uniformly.

Although in the course of our inquires, our previcus knowledge of the loss sustained in this material by punching and shearing was fully borne out, we find that consider-

able difference of opinion exists as to the exact amount of deterioration due to this cause; indeed we were unable to obtain from the manufacturers any really definite and reliable particulars on this point. It at various pressures; and the results clearly proved that flat plates of steel, stayed in the manner usual in combustion chambers, and with a reduction in thickness of 12 per cent. as compared with iron, have the same ultimay therefore be interesting to mention the result of two of a series of experiments re-cently conducted on the Tyne, in connection with a steel boiler being constructed there under the inspection of the Society's en-gineer surveyors. These experiments, the mate strength to resist buckling, but the iented to the

committee on the 10th December, 1877, and subsequently reported in detail by Mr.

Manuel, were first made with plates elevensixteenths of an inch thick. The results Not less important than the strength of boilers constructed of steel is the effect of Manuel, were first made wish Manuel, were practically identical, the loss in each case being about one-third of the ultimate strength of the plates, and the material was also read to break with a granular fracture. Indeed, corrosion would considerably shorten their lives compared with iron boilers. Indeed, corrosion is the great difficulty with engineers of the present day, anything that was not previously well known, and there can be little doubt that the ques-the fact of a considerable loss occuring in tion of durability will exercise as much, if thick steel plates from punching having been frequently made public.

It was considered by all the steel manunot greater, influence than lightness or in-creased pressure on the ultimate decision as to the adoption of steel for marine boilers. facturers that this loss was due in some de-gree to the relative sizes of punch and die The experience of some years, however, will be needed to decide this point; and as the being badly proportioned, and it would appear that the relative proportions most suitable for iron plates would not be so for steel the boilers are subjected, it will even then plates. The opinion was also expressed be necessary, before forming an opinion that if the holes were rimed out after punching, the destroyed part would be greatly, in quire what would have been the result not entirely removed. This view receives with an iron boiler placed under similar circorroboration from the results of some ex-

periments given in an interesting paper on the "Effects of Punching in Iron and Steel Plates," read by Mr. A. C. Kirk, of the firm of R. Napier & Sons, at the recent autumn session of the Institution of Naval Architects at Glasgow. With the view of obtaining identical conditions; and the paddle steamer was guestions, each of the manufacturers has kindly prepared a set of test pieces with holes drilled, punched, punched and rimed, and punched and annealed, the specimens to the proposed purchased and punched and annealed, the specimens to the proposed purchased punched and punched and annealed, the specimens to the proposed purchased purcha Sutherland is engaged in the trade between are admitted duty free

Report to Lloyd's on Steel for Boiler Making.

At the engineering establishments visited by us, we had opportunities of seeing boilers in all stages of construction, and of witnessing the various operations of bending, flanging the various operation of policiers. The results of their investigations are given in full below:

In accordance with the committee's desire that we should investigate the subject of the adaptability of steel for the purposes of marine boiler construction, we beg to report as follows:

In order to obtain as much information as possible regarding this material, we visited the steel manufactories of Messrs. John boiler than in the iron one. No perceptible difference in the extent of corrosion could be observed in any part of the boilers below caled.

The opinions of those who may be regarded the water line, and the furnaces, tube plates, and combustion chambers appear to be in The opinions of those who may be regarded as authorities on the matter differ greatly good condition; but as the boilers have not with regard to the limits of tensile strength which should be adopted for this material when intended for boiler making purposes.

Mr. Beeley states that his experience leads him to insist upon no plates being supplied of a strength above 70 tow regarded.

done in flanging iron plates—care is taken that the plates so flanged are afterward an-

of a strength above 20 tons per square inch, while Mr. F. W. Webb, of Crewe, is in favor of rather higher limits than those now

approved of by the committee. It is found, however, that steel with a strength of 26 tons per square inch will weld better and

with more certainty than steel of a higher strength. Taking into consideration the fact that the milder material is more easily

worked and less likely to be injured by care-less manipulation than that of higher strength and more brittle nature, and that in the ordinary run of boiler yards there will

express any definite opinion as to the relative corrosion in iron and steel.

In the case of the Walney, both boilers were made by Messrs. McNab & Co., of Greenock, in 1868. They are of almost the same description as those in the Duke of same description as those in the Duke of Sutherland, the pressure in this instance be-ing 30 pounds per square inch. The engines to which they supply steam are a pair of steeple engines with common jet condensers, also made by Messrs. McNab & Co. The material of which the steel boiler was made was manufactured by the Barrow Hematite Steel Co., while the iron boiler was made of be found neither the appliances nor the extreme attention paid to the work as at Crewe, we are of opinion that it would not be prudent, at least until further experience is gained, to raise the limits; while at the same time it might be advisable to recompany to the company's superintending engineer, states that the whole time during which they have been employed is little over six same time it might be advisable to recompany the company of the company is superintending engineer, states that the whole time during which they have been employed is little over six same time it might be advisable to recompany. years. As was to be expected, from the age of these boilers they are both considerably worn, but the deterioration caused by corworn, but the deterioration caused by corresion is much greater in the steel boiler than in the iron one; and especially is this so in the uptake, the back plates of the combustion chambers, furnaces and other parts subject to the action of heat. A very noticeable feature in the condition of these two boilers is that while the corrosion in the iron one is pretty equally distributed over all the one is pretty equally distributed over all the boiler, in the steel one there is a great want of uniformity in the effects upon the different plates, some of the plates being appar-ently almost corroded through, and others by the side of them being in as perfect con-

by the side of them being in as perfect condition—so far as regards corrosion—as when they first left the rolls.

At an interview with Mr. J. T. Smith, the manager of the Barrow Hematite Steel Works, he explained that at the time these plates were made the knowledge and experi-ence in the manufacture of Bessemer steel was comparatively limited, forromanganese was scarcely known, and not used in any Bessemer steel works, and the general mode of making steel was such as to render it impossible to secure uniform results. Mr. Mc-Nab, the maker of the boiler, also states that he sometimes found great inequality in the material, even in different parts of the same plate. The results witnessed in the steel boiler of the Walney may therefore be due to the want of homogeneity in the plates used, and cannot be taken as a criterion of the effects of corrosion on mild steel as at present manufactured.

In conclusion, we would remark that in the construction of steel boilers greater care and attention must be exercised with the and attention must be exercised with the workmanship than is required in the case of iron boilers; and the difference between the two materials and the consequent different manipulation required in each case, must be realized, not only by the manager but by the workmen who will have to use the material; for, if steel plates are drifted heavily and knocked about as iron heiler plates usually knocked about as iron boiler plates usually are in boiler making, the material will be injured. We may expect to see steel boilers extensively used in preference to those made of iron, where lightness or increased pressure is an object, while if they are made with the care that this material requires, and eventually prove to be as durable as iron boilers, it will be a question whether a considerable reduction in the factor of safety may not be found quite compatible with perfect safety and efficiency. knocked about as iron boiler plates usually

feet safety and efficiency.

After having given all the circumstances in connection with the whole matter our most careful consideration, we would respec-tfully submit that where is it proposed to use steel boilers in vessels intended for classification in this society's register book, the requirements of the case would be met Not less important than the strength of by sanctioning a reduction from the scant-boilers constructed of steel is the effect of lings prescribed by the rules for iron boilers, corrosion on this material as compared with in the shell plates and stays to the extent of 25 per cent., and in the flat plates not subject to the action of heat, to the extent of 12 per cent., under the following condi-

> 1. The material to have an ultimate ensile strength of not less than 26 and not more than 30 tons per square inch of

> 2. A strip cut from every plate used in the construction of the furnaces and com-bustion chambers, and strips cut from other plates taken indiscriminately, heated uni formly to a low cherry-red heat, and quenched in water of 82 Fahr., must stand bending to a curve of which the inner radius is not greater than one and a half times the

thickness of the plates tested.

3. All the holes to be drilled, or if they be punched, the plates to be afterward an

4. All plates, except those that are in compression, that are dished or flanged, or in any way worked in the fire, to be an nealed after the operations are completed.

 The boilers upon completion to be tested in the presence of one of the society's engineer surveyors to not less than twice the intended working pressure.

The Argentine Republic has adopted a new customs tariff, by which steam engines of and punched and annealed, the specimens representing the pitch and diameter occuring in pratice in thick plates. We have also had prepared a number of test pieces of iron of the same thickness as the steel specimens, to be tested at the same time, to show the comparative results, which cannot fail to be for continuously the same time, to show the comparative results, which cannot fail to be seemed of these boilers. The Duke of creat interest and nearly specimens of the kindness of Capt. Leads than 10 horse-power, and nen galvan-and Northwestern Railway Company, at the discovery of the same thickness as the steel specimens, the Barrow-in-Furness Railway Company, at the same engines of control of the same thickness as the steel specimens, the Barrow-in-Furness Railway Company, at the same engines of control of the same time, to show the permission was given for an examination to be made of the same thickness as the steel specimens, the Barrow-in-Furness Railway Company, at the same engines of capt.

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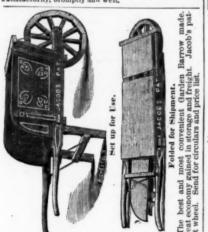
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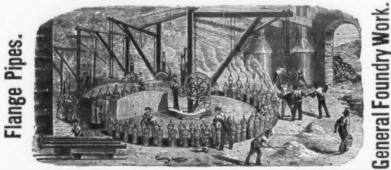
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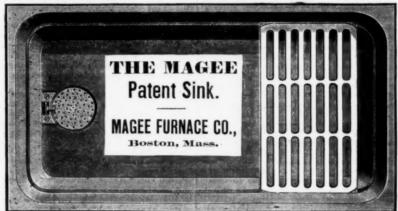
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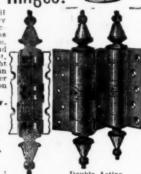


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type.

Ten parts lead and 2 parts antimony form an alloy that is still softer, and is used for

Fourteen parts lead and 2 parts antimony form an alloy that is softer than any of the above alloys, and is used for the largest-sized

A small amount of tin is sometimes added to the above mixtures, and some type foun ders add I or 2 per cent. of copper. Both of these metals improve the quality of the type, when used in small quantities.

Forty parts lead, 8 parts antimony and 2 parts tin form an alloy that is used for

stereotype plates.
Six parts lead and 2 parts tin form a coarse solder, used by plumbers. This alloy melts at about 500 Fahr.

Two parts lead and 4 parts tin form the fine solder used by tinners. It melts at about 350 Fahr

Ninety-four parts lead and 6 parts anti-nony form an alloy that may be rolled into theets, and is a little harder than pure lead. This alloy is much used for sheathing for

ups.
Twenty-four parts lead and 4 parts anti-nony form an alloy that is used in place mony form an alloy that is used in place of Babbitt metal for filling small boxes and

Twenty parts lead and 4 parts antimony form an alloy that is a little softer than the above, and is used for the same purpose. Either of these may be hardened by the additional three descriptions. dition of more antimony; but care must be taken not to use too much antimony, for it will cause the alloy to lose its fluidity, and it annot be run into the boxes.

All alloys of lead and antimony are ren-dered more fluid by melting them under a vering of oil.

is made. Eighteen parts lead, 4 parts antimony and

I part bismuth form an alloy that expands on cooling. This alloy is much used for metallic patterns for snap mouldings.

A good solder for copper and iron is composed of 3 parts zinc and 4 parts copper.

A softer solder that is used for ordinary brass work is composed of equal parts of

zinc and copper.

A very hard but fusible solder is composed. of 2 parts zinc and 1 part copper. This solder is so hard and brittle that it can be easily crumbled in a mortar when cold.

The two first solders are first alloyed and cast into ingots. The ingots are allowed to cool in the mould and then reheated nearly to redness upon a charcoal fire, and are broken up on the anvil, or in a mortar, into a finely granulated state, for use

The following metals and alloys are usually used as solder in the art of hard oldering.

Fine or pure gold, rolled or beaten into sheets, and into shreds, or small pieces, is used as the solder for soldering chemical vessels made of platinum.

vessels made of platinum.

Silver solder, composed of 4 parts silver and 2 parts yellow brass is much used for hard soldering. The brass is used in this solder, so that the operator can tell when the solder is fused by seeing the blue blaze caused by the burning of the zinc. This solder is either rolled into thin sheets, and cut intermall bits forms or is grapulated while hot

for soldering iron.

Spelter solders, granulated while hot, are Spelter solders, granulated while hot, are used for soldering iron, copper, brass, gun metal, German silver and sometimes for gold drawn by hammering or easily cut with a and silver alloys.

ployed for the white alloys, such as German

silver, gun metal, &c.

The flux most generally used in hard soldering is borax. In fact there is very little hard soldering done without the aid of this flux. It is generally granulated, and used

SOFT-SOLDER ALLOYS. The soft solder used by plumbers, called sealed solder, is composed of 2 parts tin and 4 parts lead. This solder melts at about 450° F.
The common solder used by tinsmiths is

composed of 4 parts tin and 2 parts lead. This solder melts at about 35° Fahr.

The bismuth solder is composed of 7 parts bismuth, 5 parts lead and 3 parts tin. This solder melts at about 225° Fahr.

All by sof zinc and tin are very hard and brittle, and are but little used alone. By

All the tin and lead solders become more trittle, and are but here used alone. So fusible the more tin they contain. Thus, I the addition of copper to alloys of these two part tin and Io parts lead melt at about metals, the alloy is rendered more malleable and soft. 550 Fahr., while 6 parts tin and I part and soft.

Arsenic makes ali alloys har tin, lead and bismuth solders become more and is very dangerous to use. fusible the more lead and bismuth they con-

The fluxes used in soft soldering are

This metal is made of 1 part copper, 3 small amount of brittle antimony has been parts tin, 2 parts antimony, and 3 parts added.

An alloy of 6 parts lead and 1 part antimore tin are added after the composition is in the molten state. This composition is called hardening, and when the metal is used for filling boxes, 2 parts tin are used to 1 of hardening. The above alloy constituted in the constant of the constant o

utes the best anti-attrition metal in use, but on account of its expense it is very little used. The anti-attrition metals commonly used are principally composed of lead, anti-mony and as the above so good as the above.

FLUXES FOR ALLOYS.

The best flux for alloys of copper and tin is resin. It should be added when the metals are almost melted.

Another good flux is sal-ammonia. In using this flux the copper is usually melted first and the flux added. When it is in the mushy state, after the flux has been put in, the zinc and tin are then added.

A good flux for old brass is common resin soap. It should be added in small lumps and stirred down into the metal when in the olten state.

In forming alloys of different metals the molten metals should always be kept under a covering of black glass or pulverized charcoal to prevent oxidation.

coal to prevent oxidation.

BLACK FLUX.

Black flux, as it is commonly called, is composed of 7 parts of crude tartar, 6 parts of saltpeter, 2 parts of common bottle glass, and by some a small amount of calcined borax is added. These ingredients are first finely pounded and mixed together, and then gradually heated in an iron pot or ladle so as to burn them together. Care should be taken to not overheat the mixture, and as soon as it is thoroughly melted and mixed together it should be removed from the fire and allowed to cool. After it has cooled it is finely pulverized and sifted, and is then and anowed to cool. After it has cooled it is finely pulverized and sifted, and is then ready for use. It has a great affinity for moisture, and should be protected against it by being placed in glass bottles and the bottles corked up until wanted for use. This is the most powerful flux that can be made. It is but little used in forming or fluxing alloys, but it is principally used by assayers in assaying of different kinds of metallic ores. In these assays the quantity of black flux used varies according to the quality of the ores, but the amount generally used is about an equal amount of ore and flux. The ore is first roasted and then finely broken up and mixed with the flux, and the whole is then rapidly heated in a crucible. If the covering of oil.

Five parts lead and 5 parts tin make a beautiful white alloy, used for organ pipes. The mottled, or crystalline appearance, so much admired in the pipe, is caused by using an abundance of tin.

One hundred parts lead and 2 parts.

One hundred parts lead and 2 parts the crucible. The crucible is then removed from the fire and the mixture either poured from it or allowed to cool in it. After it has cooled the slag is knocked off with a hammer and a button of metal obtained. When using this flux the clay crucible, without either coal or plumbago, is preferred, for the flux is very hard on a crucible that contains either of these substances. Black flux is used by some foundrymen in melting the fine scrap sweepings from the floor, and dross and refuse from the crucibles, by melting these in a crucible with black flux. They obtain considerable amounts of metal from them that would otherwise be lost. In melting this refuse with black flux the common

clay crucible should always be used.

NATURE AND CHARACTER OF ALLOYS.

Alloys of gold, silver and copper are generally superior in strength to any of the more fusible metals, and may be forged either when red-hot or cold. These three metals seem to units in any perpendicus and metals seem to unite in any proportions, and always form an alloy that is malleable when

always form an alloy that is malleable when either hot or cold.

Pure gold is but little used in the arts; it is then too soft. It is generally alloyed with silver and copper, both to harden it and depreciate its value. Alloyed with copper, it forms gold of a red tint; with silver, it forms gold of a green tint; and alloyed with both copper and silver, it gives intermediate. both copper and silver, it gives intermediate tints.

Pure silver is but little used alone; it is generally alloyed with a small amount of copper, which does not change its color, and greatly improves its malleability and work-

caused by the burning of the zinc. This solder is either rolled into thin sheets, and cut into small bits for use, or is granulated while hot. The gold solder, the composition of which is given under the head of gold alloys, is rolled into thin sheets and used for soldering gold alloys. Gold soldering is generally done with the blow-pipe, as the work is seldom large enough to require the brazier's hearth. Pure copper, in shreds, is sometimes used for soldering iron.

file, but an alloy of I part copper and 2 parts and suver alloys.

As a cheap substitute for silver solder the zinc is as hard and brittle as glass, and may be easily pulverized.

be easily pulverized.

An alloy of 2 parts copper and 1 part lead makes a soft, malleable metal, but is inferior dering is borax. In fact there is very little hard soldering done without the aid of this flux. It is generally granulated, and used in the dry state for large or heavy work, and for small work it is generally used in solution with water.

makes a soft, malleable metal, but is inferior to an alloy of copper and z part lead the lead will ooze out in cooling. In alloys of 1 part copper and 2 parts lead the lead will not unite, but will sink to the bottom when cooling.

Alloys of 6 parts copper and 1 part the lead will not unite, but will sink to the bottom when cooling.

Alloys of 6 parts copper and 1 part tin make a very hard alloy, and the alloy gets harder and whiter the more tin is added. Alloys of tin and copper should not be too rapidly exposed to the air, for if a large per-centage of tin is used it will strike to the surface and ooze out or make hard spots in the casting.

Alloys of zinc and lead cannot be made

without the addition of arsenic, unless the lead is alloyed in a very small quantity.

Arsenic makes all alloys hard and brittle. used except to impart fluidity to the very infusible metals.

Alloys of lead and tin are very malleable The fluxes used in soft soldering are borax, sal-ammonia, chloride of zinc, common resin, Venice turpentine, tallow and sweet oil. Those most commonly used for ordinary work are common resin and chloride of zinc.

BABBITT ANTI-FRICTION METAL.

Alloys of lead and tin are very maneaue and ductile when cold, but at a temperature of about 200° Fah. they lose the power of cohesion and are exceedingly brittle. The alloys of tin and lead partake of the general nature of these two metals. They are soft and malleable when cold, even when a soft and malleable when cold, even when a soft and malleable when cold, but at a temperature of about 200° Fah. they lose the power of the soft and malleable when cold, but at a temperature of about 200° Fah. they lose the power of the soft and malleable when cold, but at a temperature of about 200° Fah. they lose the power of the soft and malleable when cold, but at a temperature of about 200° Fah. they lose the power of the soft and malleable when cold, but at a temperature of the soft and malleable when cold, but at a temperature of about 200° Fah. they lose the power of the soft and malleable when cold, but at a temperature of about 200° Fah. they lose the power of the soft and malleable when cold, but at a temperature of about 200° Fah. they lose the power of the soft and the so

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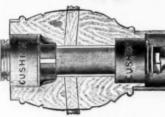


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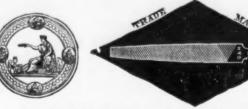


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MEDALS AWARDED: Paris Exposition, 1867; Vienna Exposition, 1873; Philadelphia, 1876. Illustrated Catalogue sent per mail on application.

#### INDUSTRIAL ITEMS.

MAINE.

The Pembroke Iron Works are now in

#### MASSACHUSETTS.

The Bradley Car Works, at Worcester, are engaged on a contract for 40 open cars for excursions on the New York and Manhattan Narrow Gauge Railroad at Coney Island. Two smoking cars for the Lowell and Nashua road are nearly ready for de-

A lot of shovels and spades of all sizes and descriptions are on their way to the Paris Exposition from the Ames Works at North

Twelve thousand needles a day is the resent manufacture at Charles Howard & Co.'s establishment in Brockton.

Joel Hayden has offered to set†le with the

creditors of Hayden & Co., 331/3 per cent. on 22 months' time, in 10 installments, without security. The latest rumor is that one of the creditors expects to buy out the others for about 25 per cent. and will continue the business. The Haydenville Savings Bank is under temporary injunction, restraining it from doing business until some plan can be devised for equalizing the loss from the Hayden failure.

There can be little doubt that Greenfield must suffer considerably in the near future by the removal of the John Russel Cutlery Company's workmen and their families to Turners Falls. The company is doing a fine business at the latter place, and the 300 or Ansonia Brass & Copper Co. 400 workmen mostly live in Greenfield in the vicinity of the former factory, and go back and forth on trains run especially for their accommodation and at very low commutation rates.

The iron works at New Bedford which, in 1869, cost \$2,500,000, recently sold for \$361,141, a loss of \$2,138,859.

\$301,141, a loss of \$2,130,859.
The prospects for a good run of business at the Wason Car Company's works, at Springfield, during the present season are very flattering. There are now 50 new passenger cars under contract for the two new senger cars under contract for the two new railroads running from Brooklyn to Coney Island, which are to be finished by the first of June, and a number of lesser contracts are also to be filled. There are as many cars contracted for as were built last year, so that if no more contracts should be made the amount of work turned out will equal that

amount of work turned out will equal that of 1877. Some 200 men are now employed at the establishment, and from 250 to 300 will have work during the summer.

The Florence Machine Company, formerly the Florence Sewing Machine Company, have chosen these officers: President, D. G. Littlefield; treasurer, H. P. Dibble; directors, Sidney Strong, S. M. Smith, Webster Herrick, H. G. Knight, W. B. Hale and I. E. Parsons. The company are now build-E. Parsons. The company are now build-ing a new machine, combining many of the points of the old "Florence," which they will put into the market this spring.

Jerome Wheelock, of Worcester, is having

a huge pulley balance wheel constructed by the Hartford (Conn.) Foundry and Machine Company, to be used on the engine which he is building for the Paris Exposition. The wheel is 20 feet in diameter, 37 inches across the face, and will weigh 21,000 pounds. It will receive a belt 36 inches wide and is being cast whole.

CONNECTICUT.

The Vulcan Iron Works (of New Britain)

Company have begun digging for the foun-dation of their factory building.

At a meeting of the Miller Bros. cutlery company, of Meriden, nearly all the credit-ors accepted the terms of 20 per cent. on 60

ors accepted the terms of 20 per cent. on 60 days' credit, or 30 per cent in stock in a new organization.

William Jessop & Sons, Sheffield, England, bought at sheriff's sale, Wednesday, through their agents, Messrs. Mersick & Woodford, of New Haven, the machinery in the factory of the New London Horse Nail Company for \$3000. The building and real estate of the company is already owned by estate of the company is already owned by the Messrs. Jessop. The machinery will probably be removed to Northampton, Mass.

The Billings & Spencer Company, of Hart ford, are running full time in all depart ments, and in some departments overtime Their drop forgings are in demand, and large portion of their orders are for pistol parts, and lately they have begun to drop-forge the cylinder blanks, which have here tofore been cut off from the steel bar.

The Howe Sewing Machine Company have paid up all their indebtedness, and are now running their factory at Bridgeport with about 300 hands.

NEW YORK.

Messrs. D. M. Osborne & Co., of Auburn, are now employing 900 men in their factories, They are making from ninety to one hundred mowers and reapers per day, and are ship-ping their goods all over the world. NEW JERSEY.

The Ferracute Machine Company, of Bridgeton, have shipped some of their machinery to Japan.

PENNSYLVANIA.

The Rod Mill on the Flat commenced running double turn Monday night. Even with the resulting increase of its product, the

Oley Furnace blew out this week, its stock of charcoal being all consumed. This is be-lieved to be one of the oldest furnaces in the State. A sandstone over the earth contains the names of the builders and the date

The Pennsylvania Iron Works, at Danville, have made another two weeks' start.

We clip the following from the Sharon

Herald of the 15th inst.: During the week closing Saturday, oth inst., at the Westerman Iron Works, guide and hoop mills ran double turn; bar and sheet mill single turn; puddle mill and nail factory off; both furnaces doing well, as usual; chain factory, and Nashua road are nearly ready for delivery.

The pay day at the American Watch Company's factory, Waltham, has been changed from the 11th to the 13th. It is reported that there will be no vacation at the watch factory the coming season on account of the great rush of business.

The Parker Mills Nail Factory, at Wareham, and also the Rolling Mill connected at Tihonet, have resumed operations after five weeks' inaction.

The Bay State Horse Rake Company, of Winchendon, are making large shipments to k France and Germany, and have secured space at the Paris Exhibition.

A let of shovels and spades of all sizes and the first of the weeks' inaction.

The bay State Horse Rake Company, of Winchendon, are making large shipments to k is pace at the Paris Exhibition.

A let of shovels and spades of all sizes and the first of shovels and spades of all sizes and the first of shovels and spades of all sizes and the first of the would run all the fires on, making some very excellent chains. They cannot keep up with their orders. The manager says that he would run all the fires if he could get men, so it seems that in this one branch of industry the supply does not keep up with their orders. The manager says that he would run all the fires on, making some very excellent chains. They cannot keep up with their orders. The manager says that he would run all the fires in he could get men, so it seems that in this one branch of industry the supply does not keep up with the demand. At the new mill, puddle, bar, guide and both hoop mills double turn; nail factory, 16 fires on, making some very excellent chains. They cannot keep up with their orders. The manager says that he would run all the fires if he could get men, so it seems that in this one branch of industry the supply does not keep up with the demand. At the new mill, puddle, bar, guide and both hoop mills double turn; nail factory on all week; patent process still giving satisfaction at the Keel Ridge Furnace. At the Stewart Iron Works, bloom mill closed up on Tuesden and

others interested, praying against any reduction of the import duties on iron.

The Eric Rolling Mill will be put into operation in a short time.

It is reported that the Phoenix Iron Com-

pany have secured the contract for the conpany have secured the contract for the con-struction of an aqueduct across the Hudson River; also that owing to the promising aspect of business, they will not construct any more of the New York Elevated Rail-

Thirty tons of steel wire per day are now turned out at the pulling mill in Conemaugh borough, Cambria county. The smallest size made at present is 1-36th of an inch in diameter.

Orders were received on Wednesday, the 15th, by the operatives at the Moselem Furnace to blow out at once. No cause is re-

15th, by the operatives at the Moseiem Furnace to blow out at once. No cause is reported for this unexpected order.

The glass works of G. W. Wells, at Brownsville, suspended operations recently. The firm has since failed.

McLanahan, Stone & Bayley, Hollidayshave just shipped at tons of the Moseiem Large just shipped at the lar

McLananan, Stone & Bayley, Holindays-burg, have just shipped 54 tons of the Mc-Lanahan patent closed solid top hot-blast pipes to the Glamorgan Furnace, Lewistown. The Weimer Machine Works, Lebanon, are engaged in erecting one of P. L. Wei-

mer's hot-blast ovens in Messrs. Eckerts' furnace.
The yield of the Warwick Iron Company's Furnace, at Pottstown, last week was 306½ tons, which is more than any furnace in the

Schuylkill Valley ever made in one week. Messrs. S. Barnes & Co., Rochester, have just completed a contract made with Messrs. Kimberly, Carnes & Co. for a lining for Keel Ridge Furnace, Sharon, and recently con-tracted with the Crowther Iron Company for their Clara Furnace, and with the Etna Iron Company for the No. 2 Etna at Nowcastle, for a lining and bosh each. The Clara is 16x65, and the Etna 15x50.

PITTSBURGH AND VICINITY.
No. 2 Lucy Furnace is again in blast,
Macintosh, Hemphill & Co. are turning
out some very fine work for the new South
Pittsburgh Rail Mill.

Arrangements have been entered into by the Cambria Iron Co. for the manufacture of Williams' patent horse shoe, that has already been illustrated in our columns. The necessary machinery will be procured

The Edgar Thomson Steel Works have moved their city office into the elegant and commodious rooms fitted up for their espe-cial use, No. 48 Fifth avenue. They now have the handsomest offices in the city. The affairs of the Pittsburgh and Newcas-

the narrow-gauge road have progressed so far that four locomotives have been ordered from Porter, Bell & Co., two to be finished about the middle of April and the other two by the 10th of July.

WEST VIRGINIA.
The Crescent Mill, Wheeling, resumed

work on the 14th inst.

The contract for furnishing steam pumps, &c., to supply the penitentiary with water, has been awarded to E. A. McCormack, of

ted a very con fitted pay car for the Columbus and Hocking Valley road.

The Sarah Furnace is 50 feet high, with a

The Sarah Furnace is 50 feet high, with a 14 feet bosh and five blast tuyeres. A bell and hopper, worked by the ordinary counter weight crab, closes the top. There are three Whitwell ovens, each 15 feet in diameter and 38¼ feet high. The smoke stack, which presents a fine and symmetrical appearance, is made of boiler iron lined with fire-brick; its total hight is 108 feet. The base is 14 feet high and 12 feet surers, the fire-brick; its total hight is 108 feet. The base is 14 feet high and 12 feet square, the inside diameter, being uniform throughout its length, is 5½ feet. The upright blowing engine, built by Lambert & Gordon, has a 72-inch blast cylinder and a 34-inch steam cylinder—3-feet stroke. There are two batteries of boilers, three to a battery, or six in all, each having two flues and being 42 inches in diameter and 28 feet long. The hoisting house consists of six iron columns, similar in every respect to the hoist at the similar in every respect to the hoist at the Iron and Steel Company's Furnace, the cages or platforms being worked by Crane Bro's steam hoisting engine. Wateris supplied from the river and distributed by three large Cameron pumps. There is a reservoir for water near the engine house, and three ice breakers are planted in the river above the resulting increase of its product, the Wire Mill on Portage street can use the rods faster than they can be furnished it. Three new drawing tables have been placed in the latter, which will give employment, when occupied to their full capacity, to about 30 additional hands.—Johnstown Tribune.

It is rumored that the rolling mill and nail factory of E. & G. Brooke, which have been idle for necessary repairs, will resume operations this week. The cylinders of both engines of the works have been enlarged to regulate the motion of the machinery more uniformly.

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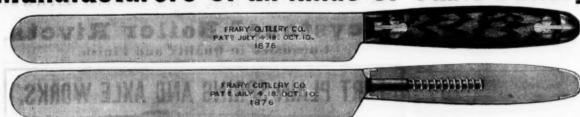


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Manufacturers of all kinds of Table Cutlery.



The above Illustrations represent their New Patent Screw Tang Lock Fast Solid Handle Knife.

There is no question but that a solid handle Knire is much more preferable than a scale tang. The great objection to their use hitherto is, that no solid wood handle nas been placed on the market with the handle properly secured—no handle put on with cement will stand the wear and tear of every day usage. The cement will expend and contract with the action of heat and cold, and become loose, crack and come off, causing great projudice against their use. This objection is overcome in our patent screw tang. A wood screw is welded to the tang of the Knife or Fork, and screwed druly and securely in the handle and locked there by the bolster, making a very strong neat and handsome infite, which we warrant lover to get loose, crack or come off. We manufacture a large variety of patterns, both Table, Butchers and Carvers, and turnish the batent handle nearly as low as the scale tang. We are prepared to furnish this line of goods, together with the scale tang and from handle, very promptly, and very respectfully invite the attention of the trade.



Sixth and Chestnut Sts., Philadelphia, Pa.

ALFRED H. HILDICK,
12 Warren St., N. V., Importer of
Birmingham Henery Hardware, Chains,
Anvils, Vises, &c.
Agency of HILL BROS. & CO., WALSALL, ENGLAND
GENERAL HARDWARE MERCHANTS,

Ball's Pat. Solid Steel Sheep Shears.



ESTABLISHED 1852.

NEW YORK KNIFE CO.

Table & Pocket Cutlery, WARRANTED TO BE MADE OF THE BEST

MATERIAL.

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SPECIALTY

COAL WASHING MACHINES AND IMPROVED COKE OVENS.

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FISHER'S MOWING MACHINE KNIFE CRINDER, SICELS EDGE HAT ENIVES, HAT PORES, SEC-

TIONS, &s., &c.
Seld by Hardware and implement Dealers
everywhere. Illustrated Circular and
Quotations sent free. HENRY FISHER, Canton, Ohio. driven, is near the center of the building and

Journal.

The Lake Erie Iron Company, Cleveland, have occupied their fine new quarters in the Schofield Block on St. Clair street.

The Belfont and Lawrence mills, at Ironton, were in full operation last week.

The Monitor Furnace, at Ironton, will be ready to blow in about the 1st of May. The principal repairs to the furnace will consist of a new stone hearth.

of a new stone hearth.

A new Player's hot blast is being put
up at Ohio Furnace, Scioto county. The
work will not be completed until about June 1.
The Girard Furnace is making about 55

tons of good iron per day.

The Diebold Safe Works, at Akron, are making seven safes daily.

It is reported that the Valley Mill, at Youngstown, will resume operations at an

early date.

The Excelsior Works, at Akron, still remain unsold owing to a lack of bidders.

Mr. A. B. Stone, who has been identified with the Cleveland Rolling Mill Company from its earliest organization, and widely and favorably known as its president, having established his residence in New York, has regired the office of president and achas resigned the office of president and accepted that of vice-president, with the charge of the New York agency of the company, and will hereafter devote his attention more exclusively to the duties of such agency. Mr. Henry Chisholm, who during the same period has been the vice president the same period has been the vice-president and general manager of the company, succeeds Mr. Stone as president.

ILLINOIS.

A meeting of the stockholders of the North Chicago Rolling Mill Company is called for Thursday, April 4th, to take into consideration arrangements already entered into for "largely increasing the manufacturing capacity of the company by purchase or lease of other works." The "other works" are without doubt the Milwaukee mills. Why the Chicago company desire to gain possession of them is not so evident. It may be that the large interest of the Ward estate in both the Chicago and Milwaukee mills has something to do with the matter.—Wayne County Courier.

The Chicago Galvanized Wire Fence Co. consideration arrangements already entered

The Chicago Galvanized Wire Fence Co. is the style of a new corporation lately organized in Chicago with a capital of \$50,000. The incorporators are E. M. Crandall, C. H. Kakshom and C. T. Mason.

The Joseph Brown Iron Works, at South Chicago, are now in full operation, except the nail mill, which it is intended to start about the 1st of May.

10WA

The Council Bluffs Iron Works are the the largest of the kind on the Missouri above St. Louis. They were founded in 1860 by Mr. C. Hendrie, the president of the present company, who is emphatically a pioneer worker in iron. He started the first foundry in Burlington, Iowa, and for some years carried on the works successfully. He then discovered of the works there, and in 1860 disposed of the works there, and in 1860 started the Council Bluffs Iron Works, the started the Council Bluffs Iron Works, the first foundry established there. In 1862 he went to Colorado, and put up the first foundry in that territory, at Central City. That establishment is still in successful operation, under the name of the Hendrie & Bolthoff Manufacturing Company, and engaged in the manufacture of mining machinery as a specialty. The Council Bluffs Iron Works are an incorporated company Iron Works are an incorporated company with a capital of \$75,000, of which Mr. C. Hendrie is president and R. J. Cory secretary and treasurer. The specialty of the works is the manufacture of steam engines, boilers, mining and general machinery, &c.,
The buildings are of brick; they are large and
commodious, and filled with all the requisite
machinery. They employ from fifty to sixty
hands, and, notwithstanding the dull times, have run during the past year without once shutting down.

NEBRASKA.

Omaha is talking about a nail mill which shall secure its material for nail plate from the old rails and scrap iron in that neighborhood.

The Von Dorn machine shops at Omaha,

T. L. Von Dorn, proprietor, were established in 1873, on a limited capital, and have grown into one of the most active concerns in the city. Mr. Von Dorn manufactures steam engines, lathes and general ironworking machinery. He now employs fifteen to sixteen hands, and has a well appointed shop, supplied with all the necessary machinery of

the most improved make.
G. Andrew, proprietor of the Omaha Safe Works, commenced the manufacture of fire Works, commenced the manufacture of fire and burglar proof safes, vault doors, &c., some two years since. He employs, when running full force, ten to fifteen hands. Fenwick's Foundry Works are running on light and heavy castings with a force of five to eight hands. The Clay Street Iron Works employ fifteen to twenty hands on general mechinery and architectural ironwork. The machinery and architectural ironwork. The Nebraska Fence Works were busy with ten to fifteen hands.

KENTUCKY.

The Bellefonte Furnace blew out on the 11th of February, finishing a blast of 263 days, which she commenced on the 4th of May, 1877. During this time she made 3066 tons of good, mostly No. 1 charcoal iron, or a daily average of 11.44 tons. This product was the result of smelting-

154 bushels of charcoal at 41/20... 3 tons of iron ore at \$2.50...... 

per ton of iron made. The average consumpper ton of iron made. The average consumption of cordwood per ton of iron represented by the above 154 bushels of charccal, was 3.63 cords of wood. At present this furnace has on hand and unsold 4500 tons of pig iron, and is cutting some 11,000 cords of wood, preparing a blast for this season equal to the last.—Greenup Independent.

MICHIGAN.

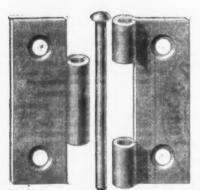
The new merchant mill of the Baugh Manufacturing Company, at Springwells, began work this week. The Eureka Iron Company, Detroit, are

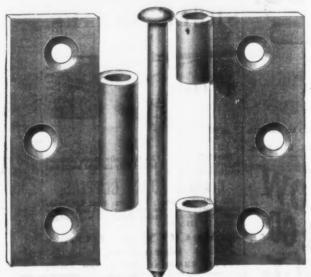
repairing their blast furnace and will soon be ready for business again. The engines and machinery are in pieces and the old hearth has been taken out. It will not be necessary to reline the furnace.

# THE STANLEY WORKS,

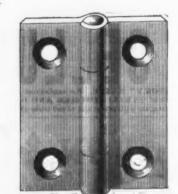
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**Wrought Narrow Butt** 

In addition to our own goods, we are prepared to furnish a FULL LINE OF

# CROOKE & COMPANY'S Wrought Iron Bright Butts.

For our latest discounts, see Circular in The Iron Age, this date.

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VETS



Rivets, Hand Iron Cutters, Punches, Shears, and Planing and Shaping Machines; Universal Ratchet Drills, and Patent Tinners' Snips. New York Warehouse, 116 Chambers Street.

MMMMMMACHINE SCREWS,

leads and points to sample.

IRON, STEEL and BRASS. Lyon & Fellows Mfg. Co., Cor. 1st and North 3d Streets, Williamsburgh, N. T.

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Manufacturers of the

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Manufacture the Largest Variety of Forged Carriage Irons of Best Material and Workmanship.

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Received the Highest Award at the Centennial Exposition.

# IMPORTANT FEATURES FOR THE SEASON OF



Reduction in Price.

LESS WEIGHT. LIGHTER DRAFT.

And furnished with either Wheels or Roller. It has been adopted and can be seen in practical operation on the Public Parks of New York, Brooklyn, Boston, New Haven, Cleveland, Chicago, and on almost all the prominent City Parks in the UNITED STATES and CANADA.

The EXCELSIOR received the First Premiums at the Great Lawn Mower Trials held in New York City, Cleveland, O., Waverly, N. J.; also at the Great International Lawn Mower Trial held at Carlisle, England, in September last, and at many other trials and Agricultural Fairs held in Europe and America.

6 SIZES FOR HAND POWER. 4 SIZES FOR HORSE POWER. Our New Horse Mower is conceded to be the LIGHTEST and BEST Horse

Lawn Mower ever made.

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The only GENUINE D. R. BARTON Tools

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HERCULES



BULLARD'S PAT. CARPET STRETCHER.

Patented June 13th, 1876.

The best thing ever made for laying carpets. It is aple in construction, durable and not expensive, it appears to operate, and is warranted not to injure the rypet. It holds the carpet in position after it is drapproper place, thus giving the operator the free th hands with which to do the nalling. The lever

s, Bung Starts, Butter Souds, Bill Hooks, Brush Hooks, Butts (Double Spring res, Box Openers, Box Hooks, Box Scrapers, Cleavers (Cast Steel), Cake Turners, I Chisels, Carriage Jacks, Carpet Stretchers (Bullard's and Common), Door Jon, Pish Turners, Ferrules (Brass), Handles, Hammers (Magnetic Tack, Steal, s (Shuffle), I See Axes (fron, Icc awis (Lisumwites, Iron Heads and Maple H'dle), Homers (Sanches), Sanches (Sanches), Bill Brace and Implement), Trowels (Garden), Tack



BEST BRANDS SOLD

BULLION. \$9.50 per doz.

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DIAMOND,

Made in Pittsburch by

HUBBARD, BAKEWELL & CO.

Everyone who keeps good Hardware. PATENT CONVEX

Fluting & Smoothing Iron.



1st. It can be used as an ordinary Smoothing trong ed. It is a Fluting Machine as well as a Smoothing Iron, 3d. The Fluting Attachment being made of brass, and convex in form, it has all the advantages of the crank machine. 4th. It combines the two articles in one, taking up the room of but one machine, and is always ready for use

A. A. WEEKS, Manufacturer, No. 82 John Street New York.



Corey's Patent Elastic Expansion

RUBBER BUCKET

For Chain Pumps. The Best in Use. Patented March 16, 1875. Sizes of Bucket, 11/4, 11/4, 15%, 2 inch. A. L. COREY. YPSILANTI, MICH.

# The Iron Age.

New York, Thursday, March 21, 1878.

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Monthly Edition

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ezuela)	8.00	4.00	2.00
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#### DAVID WILLIAMS, Publisher, 83 Reade Strect, New York.

PITTSBURGH OFFICE.

77 FOURTH AVENUE.

JOS. D. WEEKS, Manager and Associate Editor.

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AUSTRALIAN AGENCY.

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Thirty-fifth Page. - Boston and St. Louis Hardware and Metal Prices.

The portrait and sketch of the late Henry Disston, which we print on the first page of this issue, is our tribute to the memory of a man who deserves an honorable place in our national annals. Though not of American birth, Mr. Disston was a representative American manufacturer, and during his long and useful life did much to make it possible for other manufacturers to win peaceful industrial triumphs in international competition. Although he never aspired to public life, he was in his sphere a man of controlling influence, and the story of his life contains a lesson which every intelligent and ambitious young mechanic might study with profit. Mr. Disston began life by learning a trade—not as most boys learn trades, in a perfunctory, half-

rose at 18, while still in his apprenticeship, to the position of foreman of his employer's shop.

After casting a glance at the European He afterward began business for himself as a young man should—in a small way, depending upon himself and his own skill, the Peninsula. until he needed more help and was justified TRADE BETWEEN THE UNITED STATES AND SPAIN. in becoming an employer. Probably the secret of his success in early life was that he was not afraid of work, and found no pleasure in neglecting it for recreation. To the man of healthy body and well-balanced mind, work should be a pleasure when directed to the attainment of some definite and desirable result, and so Henry Disston found it. His life work absorbed his attention and concentrated his thoughts, and in its results he found worthy satisfaction. Success equally honorable, if not equally great, can be attained by any mechanic who will seek it by the same means.

#### Spain's Trade with Europe and America.

Although still in possession of some very rich colonies, the general trade of peninsular Spain has gradually dwindled down to a comparatively small figure, as the following statistics will show

	BUILDING WALL GALOW !
	IMPORT AND EXPORT IN MILLIONS OF DOLLARS.
	1875. Great Britain 3277.95
	1874Germany 1499.80
	1875. France 1481.78
١	1874Russia in Europe 741.92
	1875 Austria 550.10
1	1875 Holland 520.52
1	1874Belgium
	1875. Italy 454.58
١	1874Spain 157.00
ı	Since TSTA Spanish imports have varied

between \$100,000,000 and \$120,000,000 per annum, and the export between \$60,000,000 and \$80,000,000. In this movement the various European nations are represented in about the following proportion :

GENI	ERAL TRADE	OF SPAIN.	
	Imports.	Exports.	Total.
France	\$42,000,000	\$14,000,000	\$56,000,000
England	26,000,000	32,000,000	58,000,000
Scandinavia	2,600,000	400,000	3,000,000
Turkey	2,400,000		2,400,000
Italy	1,200,000	800,000	2,000,000
Portugal	800,000	2,600,000	3,400,000
Gibraltar	1,200,000	600,000	1,800,000
Total	Q-6	S	9 va6 6an ann

France being the next door neighbor of Spain, only separated from the latter by the Pyrenees, now traversed by a railroad, and Marseilles from time immemorial having done a large trade with Mediterranean Spain by sea, the business relations between the two countries have always been most important. An examination of the classes of goods exchanged between the two nations will, consequently, procure us an insight into the chief necessities of Spain from a commercial point of view.

#### SPAIN'S TRADE WITH FRANCE IN 1875.

Principal Imports into Spain.	
Woolens	\$3,304,040
Millinery	
Horses and mules	2,153,000
Cotton	
Cotton goods	
Silk goods	
Leather	
Hardware, &c	972,400
Hides	719,200
Cattle	1,042,800
Wool	756,600
Paper board	
Jewelry	344,400
Imitation jewelry	
Lumber	
Iron steamers	
Silk	
Iron and steel	423,600
Glassware and china	
Refined sugar	
Machinery	
Furniture	380,200
	-
Total\$	20,393,549
Principal Exports from Spain.	
Lead	\$2,000,000
Table fruit	2,884,000

.\$15,277,50 The following shows Spain's trade with France from 1867 to 1875:

1867	Imports.	Exports.	Total. \$38,660,000
х868	21,700,000	17,620,000	39,320,000
1869	19,340,000	20,720,000	40,060,000
1870	18,200,000	14,800,000	33,000,000
1871	20,320,000	21,200,000	41,520,000
1872	22,560,000	20,700,000	43,260,000
1873	22,020,000	28,200,000	50,220,000
1874	27,831,200	25,984,780	53,819,980
1875	28,114,800	18,828,341	46,943,141
Total &	200.746.000	\$186.052.727	\$286 200 222

While the Carlist rebellion lasted the comnercial intercourse between the north of Spain and the south of France suffered very much, but trade is rapidly recover-England being next in importance in ing. Spanish foreign trade, it will be of interest to examine what Spain has drawn from that country of iron, steel and their manufactures during the past two years :

ISLANDS.	an and	IHE CANALLY
Hardware and cutlery. Hoops and armor plates Cast and wrought iron. Steam engines. Other machinery. Iron rails. Steel "	422,825 472,307 447,696 1,386,454	1877. \$525,264 344,977 346,813 459,939 1,458,725 208,942 486,342

...\$3,956,864 \$3,831,000 In 1875 there were imported from England into Spain, steam engines to the amount of \$360,917, and other machinery worth \$1,161,-287, and, as we have shown above, machinery from France in the same year, \$420,400, constituting a total of \$1,942,604

Spain is a nation which not only possesses the greatest and most varied mineralogical resources of any in Europe, but she has a most extensive cotton and leather industry in Catalonia. She is, therefore, a great consumer of machinery for mining purposes, as hearted way, but with a determination to well as for the spinning and weaving of cot-

master it thoroughly. Beginning at 14, he ton, wool and other textiles; hence this ex-

trade of Spain, we shall be all the better

I	n Thouse	inds of Doll	lars.	
Fiscal years.	Our Import.	Domestic Export.	Foreign Export.	Tota
1864	2,188	2,654	815	5,6
1865	1,055	4,036	13	5,10
1866	2,725	5,719		8,44
1867	3,051	5,507	79	8,6
1868	2,879	7,640	23	10,54
1869	3,558	7.596	5	11,15
1870		9.750	33	13,42
1871	4,188	10,248	4	34,44
1872	4.426	9,446	21	13,89
1873	4,962	10,057	17	15,03
1874		11,644	9	16,25
1875		7,540	27	12,10
1876	3,401	10,138	9	13,54
1877	3,281	10,462	12	13.75
Grand total	48,485	112,437	1,067	161,98

It will be observed that our general trade with Spain has very nearly doubled since the war, and that during the 14 years above enumerated our export has been more than twice as large as our import. This is chiefly due to the increased amounts of cotton and petroleum which that country takes from us.

The following shows the principal articles of domestic production which we have exported to Spain during the fiscal year ended

Julio 30, 10//.	
	B1,0
	48,
Wheat	70,1
Other cereals	3,
Farina	17,
Cotton 5.59	94.
Drugs	5,4
Glassware	2,
Jewelry	1,5
Machinery	5,
	38,
Crude Petroleum 36	61,
Naphtha	3,
Refined Petroleum 2,30	
Residuum	25,
Cottonseed oil 12	33.
Perfumery	1,
Bacon	32,0
Lard	16,
Scales	E,0
Whiskey	19.
	12,
Leaf tobacco 86	56,6
Manufactured tobacco	2,0
Wax	7.0
Lumber 10	12,1
	37.3
Timber	6,0
Woodenware	3,1
	9,8
	91
Total\$10,46	18.7

The Spanish merchant navy now numbers 2744 sailing vessels with a tonnage of 530, 533, and 224 steamers with a capacity of 176,310 tons; together, 2968 vessels with an aggregate tonnage of 706,843. Of railroads in operation there are 3594 miles, the population being 17,114,200; there are, consequently, 21 miles to every 100,000 inhabit Spain had in 1875 some 2358 post offices, distributing during the year 4.8 let-ters per capita of the population, and 4.8 them) most important question, that they newspapers, circulars and samples.

Spain possesses all the elements for a rapid recuperation of national and individual prosperity, but will require, in order to be able to rise again, at least 20 years of profound peace at home and abroad. Her popula tion is sober and industrious, and under an energetic, intelligent and economical govern ment, in the possession of the splendid colonies of Cuba, the Philippine Islands and Porto Rico, she may soon rank on a par once more in power and importance with the remaining Latin nations.

Spain is doubly interesting to us on ac count of the enormous trade we are doing with her colonies, whose prosperity is largely bound up with her own. The wants and preferences of the people of Spain are, in a measure, known to us from what we see of the Spaniards in Cuba and Porto Rico, and it ought to be an easy matter for us to compete in Spain with England and France in many articles, machinery, hardware and cutlery among others, all of which her colonies take from us in increasing quantities while we have surrendered the mother country therein to the European manufacturers exclusively.

We cannot conclude this article without alluding to one of the most important political events of the times, the pacificaof Cuba, now from appearances happily consummated. While doing so we refer to our article of November 15, 1877, 'The importance of our Cuban trade, in which we foreshadowed the enlivening effect which peace in Cuba would have or our business relations with the island. We there showed that we exported to Cuba in believe it is there. the fiscal year ended June 30, 1876, \$14,-000,000 of domestic goods, and \$2,000,000 of foreign goods, while we imported \$59,000,000 of Cuban produce. During the fiscal year 1877 we exported to the island \$13,000,000 of domestic and \$1,000,000 foreign goods and imported thence the large amount of \$68,000,000 of colonial produce, the increase resulting from the rise in sugar and mo-

The planters of Cuba will now once more deserve and enjoy credit, and our machine shops during the next five years will be busily engaged in building sugar machinery for the destroyed estates; railroads will be rebuilt and extended, and our business connections with Spain and her colonies will become more active and valuable than they have been previous to, or during, the past 10 years of Spanish political convulsions.

Mr. Edison, the inventor of electrical marvels of various kinds, has lately perfected a device which, if all we hear about called the erophone, and its function is that, placed upon a locomotive, it will raise its voice when desired and announce in giant tones, that can be heard for miles, 'I am

engine Marmaduke, and will stop at Boonton Station,' or whatever other warning or information it chooses." We can see at a glance the extent to which this device will increase the comfort and satisfaction of railway travel. For example, the warning now conveyed to people or cattle on the track by the steam whistle of an approaching engine, can be effectively supplemented by a few forcible remarks from the ærophone; and when, in the event of any unusual stoppage, the passengers shall poke their heads out of the car windows, anxious for information as to what it is all about, the engineer can win gratitude from nervous people by inciting the aerophone to remark, in "giant" tones, "It's all right, gen"tlemen; nothing but a—cow on the 
"track." During the season of pleasure travel the erophone might be further util ized by calling out the names of stations (we hope its enunciation will be more distinct than that of the average brakeman) and expatiating upon the beauties of the scenery, or calling attention to the historical incidents rendering the localities noteworthy. For example, a Hudson River engine provided with an erophone could repeat whole chapters of Lossing's "Field Book of the Revolution," interspersed with choice extracts from the letter press of "Picturesque America." Indeed it is a won-derful invention. We have but one fear concerning it, and that is that from constant association with railroad men the ærophone will acquire certain loose habits of thought and speech which will lead it to indiscreet utterances upon sufficient provocation. Unless Mr. Edison can insure the public against being shocked by ærophonic profanity, delivered "in giant tones that can be heard for miles around," we shall never feel that ladies and young persons are quite safe in its company.

#### The Mobilization of Labor.

We refer again to the prospect of labor agitations in this country, as it is one of the most vital questions now agitating our people. Finance and tariff may for the present seem to overshadow all other questions, and those interested may solace themselves with the belief that the agitation of these will postpone the struggle that is sure to come; but a moment's investigation will show that these questions have no meaning nor interest to hundreds of thousands who are showing the utmost concern in them. except so far as they have a bearing on the rate of wages and the employment of idle labor. Underlying the deep interest in all these questions is the labor problem, and it is only as steps in the solution of this (to stop to discuss or consider finance or tariff.

And it may as well be admitted that these nen are not groping after an issue. They have one, distinct and well defined, and they also have a way by which they mean to reach the object they are seeking. The aim is to control labor and its wages—the means, consolidation or mobilization of all laborers. This is the dream of the labor agitators. To its realization these men are giving the most positive and intelligent efforts of their lives. The leaders in the movement are organizers of no common or inferior kind, but know how to control men, to unite them and to organize them. They are determined to succeed, because they believe that the only way to reach the ends they have been aiming at is by such united effort as we have suggested.

There is another phase of this impending struggle that it is well to consider. These men propose not only to control themselves and their fellow laborers and prevent working under price by wage laborers, but they propose to prevent manufacturers from selling under price. It is no secret that during the past year certain manufacturers of iron needed only to drop a hint, and not a ton of iron could have been made in certain mills that did not sustain prices fixed by associations. To-day the unions will engage to com-

that did not sustain prices fixed by associations. To-day the unions will engage to compelent and expert engineer—consisting of pale the adherence to any price that may be named as a fair rate. We do not mention this to approve any such course, but to indicate what ideas are working in the minds of the laboring men of the country, and which it is folly to ignore or to shut ome's eyes like a little child and say we don't believe it is there.

This is no idle talk. Strenuous efforts are making to form an organization called the "International Labor Union of America." This organization has for its object confessedly the propagation of trades union ism where now it does not, or only partially, exist, the strengthening of the present organizations and the mobilization of the whole—claiming, in the words of one of its advocates, that "with the united support it "so important of the support it of the propagation of trades union." This organization and the mobilization of the whole—claiming, in the words of one of its advocates, that "with the united support it "reins of impartial justice in their own hands, and will be enabled to secure satist." Should enlist, workingmen will have the "reins of impartial justice in their own "faction to themselves by proper regulations of labor, and eventually to employ." "ers, by giving them the advantage of uni"formity of market prices, &c., and thus "protect them against themselves." We ask especial attention to this last clause, as it expressly states the purpose we have indicated above. The method is not so plainly stated as we have stated it, but the intent is evident.

The statement of principles of this organization, as put forth, embraces the following points among others:

We, therefore, believing that the emancipation of the laborers into a great protective propagation of the laborers into a great protective propagatio

it is true, will possess unique utility. It is zation, as put forth, embraces the following

We, therefore, believing that the emancipation of labor can only be achieved by the organization of the laborers into a great protective propaganda of the principles enunciated in the foregoing decla-

ration of principles, and in response to a demand made upon us by various labor organizations and wage-workers in all parts of the United States, severally agree to form ourselves into a committee known as the Central Provisional Committee of the International Labor Union, whose objects shall be to secure the following measures:

The reduction of the hours of labor.

Higher wages.

Higher wages. Factory, mine and workshop inspection. Abolition of the contract convict labor and truck

About the containers,
Employers to be held responsible for accidents by neglected machinery.
Prohibition of child labor.
The establishment of labor bureaus.
Labor propaganda by means of a labor press, labor lectures, the employment of a general organizer and the final abolition of the wage system.
The methods by which we propose to secure these measures are:
1. The formation of an amalgamated union of

hese measures are:

1. The formation of an amalgamated union of aborers, so that members of any calling can comine under a central head and form a part of the malgamated trades unions.

2. The establishment of a general fund for benutrous and the company of the

 The establishment of a general fund for benefit and protective purposes.
 The organization of all workingmen in their trade unions, and the creation of such unions where none exist.
 The national and international amalgamation of all labor unions. It will be interesting to watch the develop-

ment of this movement. It shares with all such undertakings the danger of passing into bad hands and being diverted from its original intent for partisan purposes. If it escapes this, it may be potent to accomplish great and permanent changes in our social and industrial system which will be of immediate and permanent benefit.

#### Official Tests of Steam Boilers.

There are few subjects concerning which manufacturers are more justly sensitive than official interference with their steam boilers. For this sensitiveness there is good reason, inasmuch as laws enacted and officers created ostensibly for the protection of the public against the dangers incident to the bad construction and careless management of steam boilers, have in many instances been the means of burdening steam users with taxes and extortions in the shape of fees and blackmail; and so-called official tests are often so conducted as to seriously weaken good boilers without detecting weakness previously existing or then induced. It may be stated as a broad fact that the only result which can be traced to interference by governments—national, State and local with steam boilers, has been prejudicial to the public interest, and when manufacturers using steam unite in protesting against the enactment or enforcement of laws imposing upon them certain obligations and creating officers to look after them, the disinterested citizen is not likely to make a mistake in extending them hearty sympathy and support.

Our attention is called to this subject by

the publication of a vigorous memorial by the manufacturers of St. Louis, urging upon the attention of the municipal assembly the importance of passing an ordinance making it optional with the steam user whether he shall have his boiler tested by the hydrostatic or the hammer test. The law now requires the hydrostatic test, and as we have on previous occasions urged the objections to this system, we feel especial interest in giving our indorsement to the memorial of the St. Louis manufacturers.

After making a strong plea for a careful ansideration of their claims and showing the weakness of those who have opposed their efforts, they speak as follows of the relative advantages of the two systems of inspection: advantages of the two systems of inspection:
We understand the hydrostatic test to be an air pressure forced into a boiler nearly filled with water, by what is known as a hydraulic pump. It is claimed that the application of this pressure constitutes a complete and thorough boiler inspection. To this we reply that the hydrostatic test, as applied by our city boiler inspector, is not in any sense a safe test, for the following reasons:
First. The hydrostatic test will not show the actual strength per square inch of any boiler; but its application is very liable to injure and weaken both the shells and flues.
Second, It will not show the thickness of plates, nor laminated sheets, nor crystallized iron, nor a crack when the inner surface is coated with even slight incrustation.

crack when the inner surface is coated with even slight incrustation.

Third, It will not disclose the latent defects in small tubes in tubular bollers, nor the existence of external corrosion in the fire-boxes, nor any other defects liable to exist in this type of bollers.

Fourth, It will not discover incrustation, not even in its most dangerous form, nor burned, blistered, corroded nor grooved plates, nor broken braces and stays, nor furnaces out of shape, nor overloaded safety-valves, and many other things not necessary to be repeated here.

We understand the hammer test to be a personal examination of every approachable part of a boller by a competent and expert engineer—consisting of a thorough search for imperfect material, faulty

ork of the city boller inspector.

This statement of the case is a very strong one, but it is none too strong. Practically the hydrostatic test, as ordinarily applied by inspectors, shows nothing save that the boiler is or is not tight at a certain pressure. Not only is this test useless in obtaining any information of value, but it may be a source of serious injury to the boiler - injury which is not usually discoverable at the time. It has been shown by careful experiment that a boiler may explode violently at a pressure below that of the hydrostatic test. A case of this kind happened at the government tests, the explosion taking place only a day or two after the test was made. Scale, laminated sheets, crystallized iron. grooved plates, broken braces, pitting, corrosions and blisters are dangers for which the most careful examination must be made. When we are assured that none of these defects exist, that the boiler is perfect in shape, that safety valves and fittings are in order, we know to a certainty that the boiler is safe. To compel boiler owners to submit their boilers to an injurious test, obliging them to pay for it, and at the same time giving them no assurance that the boiler is safe, is a wrong against which the strongest measures should be taken. The aim of municipal and government inspection is to detect unsafe steam boilers. It should make no difference what the test is so long as perfect assurance is given of safety. This cannot be done by the hydrostatic test. Inspection, or the hammer test as it is called, can give this perfect assurance of the condition of the boiler. This is proved by the experience of the Hartford Steam Boiler Insurance Company in all parts of the country. On the other hand, the uselessness of the hydrostatic test is demonstrated by almost every explosion.

Contrary to the predictions and positive proof, on paper, gold has declined materially since the passage of the silver bill, and in the same time bonds have advanced in London. Gold has touched 34 of 1 per cent. a drop of over I per cent. in 12 days, or more than 50 per cent. of the premium at which it stood when the silver bill became a law. This is so unexpected, so contrary to all principles of political economy, that our financial prophets are seemingly lost; but they will doubtless solace themselves with the reflection that they are all right. Isn't a principle a principle? Can it change? Certainly not. To be sure it is unaccountable that gold should be so perverse as not to go up as it ought, but they are all right.
Seriously, however, this fact shows how

utterly impossible it is to determine before hand what will be the result of any scheme even though it may be in direct opposition to the best established laws of political economy. So many circumstances may come in to modify its action that it is impossible to foretell what the result will be. It was so in this case. Gold is abundant. The New York banks report a specie reserve of \$37,000,000, an amount never exceeded since the suspension. The demand for payment of duties will be less than heretofore by reason of the use of silver for the same purpose. The balance of trade remaining in our favor will continue to make gold abundant. The future of gold is mainly a ques tion of foreign trade. There is not much probability of bonds continuing to return as long as their price in London bears the relation to the price in New York it does now and as that there is every reason to believe it will continue to do. As we write we see a Washington dispatch which states that advices received by the Treasury Department from New York indicate an early demand for American securities. European complications have seriously impaired the standing of foreign securities, and the disposition for home investment is growing with capitalists who have surplus funds to invest, even in the face of recent legislation and pending the agitation of the financial question. Negotiations are now in progress with a view to the renewal of subscriptions by the syndicate.

#### Rapid Work in Railroad Bridge Building.

The completion on Tuesday, March 12, of the temporary bridge over the Raritan road, New Brunswick, to replace the one destroyed by fire the proming, was a remarkable feat. At 7 on Saturday morning the old bridge was in ashes. At 10 minutes past 2 o'clock the following Wednesday afternoon an enormous train passed in safety over the new one. And this notwithstanding the fact that there was not on the ground at dusk on Saturday evening enough timber to dusk on Saturday evening enough timber to a kennel; that unprecedentedly safe with the work; with the work; he virginia State survey of 1835 and 1841, meet the great Pittsburgh seam. These coals safe with the safe was not on the geological map of the Virginia State survey of 1835 and 1841, meet the great Pittsburgh seam. These coals reason of the rain, and that a furious storm stopped everything one whole night. Prac-tically this immense structure, 1950 feet in tically this immense structure, 1050 feet in length and from 35 to 49 feet in hight, was apleted in less than 100 hours of actual

While the old bridge was blazing, telegraphic orders were summoning carpenters from all along the middle, Philadelphia and New York divisions of the road. Contracreached the ground on Saturday evening, it was arranged that the men from the Pennend, and the New York division the north-ern half, meeting in the river. In point of numbers the Pennsylvanians were at a disend, and the New York division the northern half, meeting in the river. In point of
numbers the Pennsylvanians were at a disadvantage, but they had a wealth of experience in just this kind of work that stood
them in good stead, and they were all
skilled carpenters. The Jerseymen, as those
working on the north end called themselves,
numbered from 150 to 250, against the
the stant and when finished will add
much toward cheapening the transportation of these coals East, South and West. A
large number of mines are being vigorously
worked along the line of the Chesapeake and
Ohio Railroad. This road when finished will add
much toward cheapening the transportation of these coals East, South and West. A
large number of mines are being vigorously
worked along the line of the Chesapeake and
Ohio Railroad in the New River region, and
delivered over inclines, many of which are
numbered from 150 to 250, against the
others 75 to 100, but many of them were

axious to expedite matters. Axious to expective matters.

In some way, however, a spirit of keen emulation sprang up between the two parties. It did not seem to the Jerseymen that the Pennsylvanians were doing much on Saturday night and Sunday morning, and they were looked upon as an easy lot to beat; but the error of that expectation was soon shown when the boys from the Keystone State got to work. They had been making preparations for the employment of mechanpreparations for the employment of mechanical forces instead of manual labor. The result was that when they really commenced work, 12 men did all their framing, six of coke being the usual amount used (with raw ores) to the ton of iron; the coal from which this coke is made is exceedingly pure, handled all the timbers, 15—aided by powerful "crabs" to do their hoisting—placed the completed bents in position, and the remainder of their force was explored in drive. mainder of their force was employed in driving bolts, spiking on braces, placing stringer and ties, &c., so as to use each man to the best possible advantage. The Jerseymen had no other hoisting apparatus than block and tackle; each timber was handled by 20 or more men, and had to be carried long distances through deep mud, from the framing ground down to where it was to be em

#### The Bituminous, Anthracite aud Cannel Coal Fields of the Virginias.

To the Editor of the Iron Age-DEAR SIR I respectfully submit herewith a brief description of some of the most prominent points of the immense coal measures of the two Virginias which came under my observation during a recent visit to that region including principally those lying in Rocking ham, Augusta, Fayette and Pendleton coun ties, along the line of the Chesapeake and Ohio Railroad, and also some remarks upon those lying in the northeastern counties of West Virginia. It is needless to add much to what has been already published in a gen eral way relative to the great coal deposits of the Kanahwa Valley and its tributaries; hence I will confine my remarks principally to the more recent developments made in certain localities, with some reliable analyses of the same.

The best-known authorities agree that the Appalachian chain, or Cumberland coal fields contains the largest carboniferous deposits on the American continent. It is estimated that West Virginia alone contains over 16,000 square miles of coal lands, principally bitu-minous, cannel and gas coals. These meas-ures are remarkable for their depth in verti-cal section and the variety and excellence of the deposits. Besides the coals of West Vir ginia, there are immense deposits east of the dividing line between the two States, lying in the eastern slopes of the Shenandoah (or Great North) Mountain, and in both sides of the ridges lying east of this mountain to the western border of the great valley of Virginia, including the Little North or (Narrow Back) Mountain, as defined upon Hotchkiss map of Rockingham and Augusta counties Eastward from the Kentucky State line and along the line of the Chesapeake and Ohio Railway to the Blue Ridge in the valley of Virginia, the immense beds of very superior bituminous coking coals, cannel and other gas coals and anthracite of Rockingham and Augusta counties, lying in close proximity to millions of tons of iron ores and limestone of excellent quality, mark the site of the future most important iron manufacturing districts in the world.

The Chesapeake and Ohio Railroad, going west, enters the first outcrop of the bitu-minous coal field near the junction of New River and Meadow Creek, a few miles west of Hinton, and skirts the New and Kanahwa valleys (the coal seams are traced on either slope to a point near Coalsmouth or St. Al bans, 108 miles west of Hinton and about 48 miles beyond St. Albans to the Kentucky State line, along the northern boundary of North River, Guyandotte and Big Sandy coal fields), and as feeders to this road some 400 miles of branch tracks can be made a very moderate cost up the Gauley and Elk rivers. The slopes and side drainage of this field are very favorable for coal inclines, making the cost of mining and delivery very low. Nature has here sunk the pits and shafts, which never need repairs. The law of gravity has provided against the necessity for pumps or other costly machinery and for the perfect ventilation of the mines without any resort whatever to artificial means, being the result of the natural position of the coal strata. The facilities here for opening a slope (the mining fixtures consisting simply of side tracks, inclines and tipples) are ex-ceedingly easy. Mr. Howell Fisher, of Pennsylvania, in 1873, said in respect to the conditions most favorable for mining, "This region stands unrivaled."

Bituminous coal beds are reached soon

much as 70,000 tons of these coals are ship-ped annually over the heavy grades of land, hill and the main Allegheny range over this road—including the famous Fairmont coal of Marion county, which is held in such high esteem in Eastern cities on account of its gas-

producing qualities.

A new railroad is laid out and chartered tors in Newark and Jersey City were drawn upon for a force of laborers. When the men, and the lumber for them to work upon, at which point connection will be made with the Valley branch of the Baltimore and Ohio sylvania divisions of the road should build Railroad, east, and south to Staunton; then out half of the new bridge from the southern connecting with the Chesapeake and Ohio

caking qualities. There are on the Laurel River eight seams marked by the outcrop, averaging about 21 feet of coal; this is called the Quinnemont section. These seams thicken as they leave the river; for instance, the 4 feet vein opened at Quinnemont, is increased in thickness to over 5 feet at the distance of four miles up the Laurel Creek. At Lowell there are eight seams with an aggregate thickness of 22 feet, and at Hawks Nest there are seven seams with 44 feet

as the following analysis will show:

COALS

	Carb.	Vola, mat'r	Ash.	Sul.	Wa- ter.	
Nutallburg Mine	69.00	29.59	1.07	0.78	0.34	
Lewell Mine	72.32	21.38	5.07	0,20	1.03	
Quinnemont Mine. N'w River Coal& (	75.89	18.19	4.68	0.30	0.94	
C'ke Co's min's,	71.33	22.53	4-33	0,00	0.81	
	CO	KES.				
Natallburg		91.22		7-53	0.92	
Sewell	*****	93,00		6.73	0.27	
Quinnemont		93.85		5.85	0,30	

of Rockingham and Augusta counties are situated along the eastern ranges of the Shenan-doah (or Great North) Mountain, bounded on the east by Little North (or Narrow Back) Mountain, and on the west by the Shenandoah Mountain, both of which are members of the great Appalachian range, which extends southerly from New York through Pennsylvania and Virginia and into Ala-bama. The Dora anthracite coal basin is from three-quarters to one mile in width across the strike or course of the mines, and extends from a point seven miles south of North River Gap, westwardly 25 miles or more, including the Briery Branch Gap. The coal belongs to the sub-carboniferous formation, and is associated with the white and gray sandstones, some with the white and gray sandstones, some of which are decidedly silicious, of the respective series, No. X of Rogers' survey (the latter formation resting upon the Catskill red sandstone) and No. IX of Rogers' survey. The Narrow Back and Great North Mountains are of the same formation of the same formation of the same formation in the same series. tion as the outer-encircling mountains in which are the anthracite coal fields of Pennsylvania.

The veins on the eastern side of the Narow Back at the Dora mines have been inverted or folded upon their eastern dips, in a manner similar to those in the southern edge of the Pennsylvania anthracite coal

fields, but to a much greater degree.

At North River Gap the eastern dip pitches from 8 to 15 degrees east, and the western (or inverted) dip from 30 to 50 degrees east. The coal which has been mined in such openings as have been made (which up to this time only extend a few feet from the outcrop, excepting the Scheffer Slope, which is about 70 feet in) is undoubtedly an anthracite, burning freely and leaving but little, if any, residue more than the ash, which is white.

During the late war some 800 tons of coal from the Scheffer Slope was hauled to Staunton, Woodstock and other places, and used successfully for furnaces and cupolas; it has also been used in ordinay coal stoves and given entire satisfaction. The vein in this slope at the face is 6 feet thick, divided into two benches of about equal thickness; the top bench is composed of pure hard coal of ex-cellent quality, while the lower bench has not as yet shown as compact a seam as the

About 50 feet south of the above opening there is another slope in the same vein which is about 8 feet thick, yielding a much better is about 5 feet thick, yielding a much better quality of coal in very large lumps; this slope is about 55 feet deep, but was full of water at the time I was there. This is a very important opening and will doubtless be vigorously worked as soon as it can be

cleared of water. cleared of water.

Further up the western slope of the Nar
row Back some 200 or 300 feet there is
another vein, which, though not yet developed, shows large outerop. At Briery
Branch Gap, about seven miles northeast on
the same slope of the mountain, some 100
feet above the feet there is a chafting way. feet above the foot, there is a shafting upon a vein 4 or 5 feet in thickness, which was also full of water; the coal lying around at ing. The situations of these mines (topo-graphically) are well suited for cheap colliery improvement, and some six extensive collieries may be worked here to advantage. The distance from these mines to Fredericks burg (on tide-water) is, by the new railroad above mentioned, 119 miles.

Messrs. Booth & Garrett of Philadelphia, in their report of February 23, 1877, addressed to Mr. S. D. Karns of that city, president of the Royal Land Company of Virginia, say: "We have often heard of this and other coals of Virginia termed semibituminous, semi-anthracite, bituminous anthracite, &c. In order to set the question at rest, we here present three analyses of coal, one of the Lykens Valley (Pennsyl-vania) from the Phillips & Shaffer mine, of well-known character, and the others of two of your coals, from openings on Briery Branch and Little Coal Run, five miles

Carb. mat'r. ter. Ash. Tot'l.

connecting with the Chesapeake and Ohio
Railroad. This road when finished will add
this report, were taken by ourselves from experiments, and the controversy on the
the places whence they are alleged to be subject is far from being ended. It is said,

as rapidly as in the best anthracite bed in Pennsylvania.

The above analyses of anthracite specicareful analyses made by the same gentle-men from seven specimens taken from the same field, and which may be seen in their report of the above date. In connection with the analyses referred to, Messrs, Booth and Garrett further say: "In regard to the use of this coal for burning, we observe: 1st, That it has just that small amount of volatile matter that classes it as an easy burning anthracite; 2d, That while it has only the percentage of ash of good anthracity the solve of these percentages. cite, yet the color of the ash proves that it is not liable to form clinkers, cinders, &c. is not hable to form clinkers, cinders, &c. We burned lumps of your coal on a fire of Schuylkill coal, and could not observe the difference in their burning except in the whiteness and looseness of your ash. It is a true anthracite, that burns freely and well. So far from its being a small deposit, we have shown that there are at least three beds, of from 4 to 8 feet in thickness, along a line of at least eight miles. Your anthracite is excellent in quality and abundant in quantity for all domestic purposes and manufacturing operations, and its movement eastward will draw heavily on the transporting power of your road over the 119 miles to tide water."

Major Jed Hotchkiss, in his late report Jan. 1, 1878) of the Chambers Survey of Coal Lands lying in Rockingham, Augusta, Pendleton, and adjacent counties, as illustrated by an accompanying map, gives an excellent topographical and geological description of the coal and other resources of

Anthracite coal from Briery Branch and North River Gap will be largely used at the Shenandoah Iron Works as soon as the railroad (above mentioned as projected) shall have been finished from Orange Court House to the above-mentioned mines; 38 miles of this road are already finished and being worked. Yours very truly, T. T. M.

#### Great Britain's Navy.

The naval power of the United Kingdom is just now invested with such peculiar interest that it becomes worth while to define the extent and character of that fleet which must always constitute the main factor of England's fighting strength, premising that a large share of the recent supplemental eredit has been devoted to naval purposes although the regular appropriation for 1877 exceeded \$56,000,000.

At the last date covered by official reports -December 31, 1876—the British war fleet was composed of 241 vessels in commission The number of men employed in the service was not less than 60,000, including upward was not less than 60,000, including upward of 33,000 sailors and 14,000 marines. We need not say that the most important division of the force is made up of armored ships. Of these at the date mentioned there were 58, from which aggregate, however, should be deducted three constructed specially for colonial defense, and eight considered too old or too badly built to mut to sea, leaving therefore, a net built to put to sea, leaving, therefore, a net total of 47 ironclads. Without running through the catalogue of names, we may say that this list includes vessels of all dimensions, from the Inflexible, of more than 11,000 tons, whose sides are 30 inches thick three-fifths of which thickness is represented by iron plates, and which carries 4 can non, each of 81 tons weight, besides steam engines of 8000 horse-power, to the Favorite. the smallest ironclad under the English flag whose armor is only 4 inches thick, but which in any other navy would be a formidable craft, having a capacity of more than 3000 tons, engines of 1700 horse-power, and

an armament of ten 9-ton guns.
Such was the state of things at the beginning of last year. Let us now see what progress was made during the next twelvemonth. According to the programme put forward by the First Lord of the Admiralty, 6 ironclads were to be finished during 1877, and all the unarmored vessels then on the stocks were to be brought nigh to completion. promised, moreover, that a new ironclad of the first class should be begun, together with a ram of sufficient power to cope with cer-tain redoubtable engines of war said to be building in Continental harbors, and, in adthe top resembles the Lykens Valley (Penn-sylvania) anthracite. All the mines in this two sailing vessels. In a word, the minister the top resembles the Lykens Vauey (reinsplayed) anthracite. All the mines in this field that have been explored have solid rock roofs and floors, which is a valuable rock roofs and floors, which is a valuable fleet more than 14,000 tons, while private fleet more than 14,000 tons, w contractors were to build for gevernment account almost half as much again. Notwithstanding its inability to completely

fulfill the above programme, the English government has added a good deal to the veritable solidity of its naval force. Four colossal ironclads were finished and sent to sea in 1877, namely, the Thunderer, the Dreadnaught, the Alexandra, and the Temeraire. One of these, the Thunderer, ought to have been ready for service much earlier, but on the day when it was to make a trial trip one of its boilers exploded, causing an amount of damage which it required 6 months to repair. Besides the two engines of 6000 horse-power which move its screw, there are on board this vessel 26 other steam engines, and a hydraulic machine for the management of the helm, the revolving turets, and other parts of the apparatus. Thunderer is covered with plates about 14 inches thick, and carries 4 cannon, each weighing 38 tons. Its mean speed is said to weighing 38 tons. Its mean speed is said to be 13½ knots. Besides armored ships of the same character, the English Admiralty has "The above specimens of coal, like all other coals and ores whose analyses are given in specialists have severely criticised these

River coal is well known for its excellent only a short distance from the outcrop, still in the Black Sea could not fail to awaken caking qualities. There are on the Laurel we find that they improve as we enter, just the attention of the English Admiralty. Numerous experiments have been made in the way of making extremely light steam vessels destined to lodge torpedoes under mens from Briery Branch and Little Coal the flank of armored ships, or to launch that Run, Virginia, compare favorably with species of explosive provided with means of automatic movement. Essential conditions automatic movement. Essential conditions to the efficiency of such craft are unusual speed and a peculiar facility of evolution. After numerous tests, the English shipwrights have fixed upon a model 84 feet in length and only 11 feet wide. So far but a single example of the type has been completed, but this, with its powerful engines, has attained a speed of 19½ knots. It is reported, moreover, that fifteen others are now on the stocks, and that is reported, moreover, that fifteen others are now on the stocks, and that the builders have guaranteed a minimum speed of 25 knots. And here we may mention a curious fact bearing on the usefulness of such vessels, and demonstrated by recent experiments, namely, that where their hulls are pierced below the water-line, very little water penetrates, provided speed be as high as 10 knots, and almost none if it exceed 18. We may add that the Admiralty have lately undertaken the conintended struction of a submarine vessel fix torpedoes under the keel of hostile

Naval artillery seems to have made but little progress in 1877. Hitherto England has contented herself with the Armstrong guns of 8c tons, which are regularly adopted for the armament of her ironclads. Up to the present time Italy alone has gone a little further in this direction, having furnished some of her armored ships with 100-ton cannon. It is said, however, that the famous English engineer is now constructing for government account a cannon of 150 tons But whatever may be the slight superiority of a few isolated pieces, as in the case just named, there is little doubt that the British iron fleet, taken collectively, both as regards weight of armament and defensive power, match for the joint naval forces of the rest of the world

#### The Mont Alto (Pa.) Charcoal Furnace.

The Mont Alto Iron Estate, remarkable for its large deposits of neutral brown hematite ore, the uniform excellence of its iron. and the beauty and extent of its park, which is visited by thousands every summer, comprises 20,000 acres of land situated in Frank-lin and Adams counties, Pennsylvania, and is accessible from Harrisburg by the Cumberland Valley and Mont Alto railroads. The works consist of a charcoal blast furnace and a steam bloom forge. A rolling mill for merchant bar, a chafery and a nail mill were at one time included in the plant, but have been dismantled and abandoned. The furnace stack was built of stone in 1808, and was what was known as a "quarter stack," i. e. it had but one tuyere, located at right angles to the front. The arches were peculiar to that period—low, squatty and narrow—and everything connected with the furnace was constructed to meet the necessities of a andy product of from 3 to 4 tons. The estate and works were the property of the Hughes family, and remained in their possession until 1864, when they passed to the present owners, the Mont Alto Iron Co., and came under the management of Col. Geo. B. Wiestling. Up to that time, 1864, the fur-nace retained its old time, 1864, the furdaily product of from 3 to 4 tons. The estate under the management of Col. Geo. B. Wiestling. Up to that time, 1864, the furnace retained its old-time peculiarities—its very narrow throat or funnel head; its stone tymp and dam; its bright outside snuffing tuyere. The stack was, and still is, badly cracked. The new management enlarged the throat to 4 feet diameter, and introduced water tymp and water dam, and "dark" or inside snuffing tuyeres. The stack was pierced with two more tuyere arches, increasing the number of tuyeres to three, and steam has superseded the old water power.

It is thought this was the first charcoal furnace in Pennsylvania to adopt water tymp and water dam, to enlarge her throat and to use fire brick in the construction of the hearth. Arun of 27 consecutive months, commencing in 1868, was made at this furnace, at the expiration of which time she was blown out and again started on the same hearth and boshes and run for 10 months more. We believe this is the longest campaign on record for a charcoal furnace with out renewal of hearth. No special appliances, such as water blocks or coils, were used to prolong the life of the brick

Slag fiber, since called "silicate and "mineral wool," was made at was made at this furnace in 1868, and with the white pumice cin der served as a great curiosity to the many summer visitors who frequent the Mont Park. The furnace was blown out in De cember, 1877, after a short run of 172 days, with the following record:

Thus it required for one ton of pig iron : Tons. Cwt. Qr. Lbs

Average daily product..... The iron graded from A I to mottled, by far the larger part being gray forge. The ore was exclusively neutral brown hematite from Mont Alto Mine No. 4. The charcoal was made one-fifth in kilns and four-fifths in pits, from a mixture of chestnut, oak and pine wood, the chestnut predominating. The Mont Alto charcoal kilns are believed to have been the first successful kilns in Pennsylvania. The pig iron is sold for car-wheel purposes, and is used in the Mont Alto Forge in manufacturing blooms for fire-box iron and flange plates. The furnace is 37 feet high and 9½ feet diameter of boshes. Tak-

ing into consideration this size and her age, the stock used, &c., we doubt if there is a charcoal furnace in Pennsylvania that has exceeded this work The Baltimore Car Wheel Co. have re

reference, and the record of the history of every wheel made by them. They also do a

Of Hardware, Iron, Machinery, Metals, &c., from the Port of New York, for the Week ending March 19, 1878. Christinia.

 
 Week ending March

 Christinia.
 Quan. Value.

 Ag. imp., pgs.
 3
 \$170

 Hdw., pkgs.
 70
 \$3.26

 Mach'y, pkgs.
 57,785

 Pumps, pkgs.
 8
 430

 Clocks, cs.
 41
 500

 Danish West Indies.
 8
 18

 Hull
 11,100

 Scales, pkgs.
 116
 1,000

 Hull
 11,101
 1,000
 Danish West Indies. Hull. Sew. mach, cs. 3 164

Ag, imp., pkgs Mach'y, pkgs. Hdw., pkgs... Hamburg. w. mach., cs 719 18,718 Glasgow. Sew. mach., cs 710 18,718
Hdw., cs... 143 2,529
Lea. belt., b'l's. 5 1,070
Ag. imp., pkgs. 5 305
Pumps, pkgs. 2 108
Copper, cks. 27 8,750
Mach'y, cs... 10 3,079
Clocks, cs... 30 232
Copper, bars. 388 2,000 Clocks, bxs. . 126
Ag. imp., pkgs 46
Pl't'd ware, cs 1
Belting, cs... 4
Hdw., pkgs... 10
Lead, pigs... 265 Cuba. Bremen.

Cuba.

Spikes, kegs... 14
Brass, bbls... 44
Nails, kegs... 150
R. R. bars... 900
Burners, cs... 3
Wheels, prs... 46
Coke, tons... 436
Coke, tons... 436
Coal, tons... 108
R. R. ir'n, t'ns. 46
Mf. iron, pkgs. 228
Sew. mach. cs... 51
Hdw., cs... 58
Ag, imp., pkgs. 3
R. R. mtls., pgs. 40 Hdw., cs. . . . 18
S'ndp'p'r, pgs 4
Mf. iron, pkgs 13
Lamps, pkgs 4
Ag. imp., pkgs 262
Em'ry wh'ls, cs 1
Belting, bale. 1 Antwerp. Zinc ore, tons, 100 Rotterdam.

Pumps, pkgs... 12 1,045 Hdw., pkgs... 58 581 Ag. imp., pkgs 266 11,231 Mach'y., pkgs 11 308 Clocks, cs.... 5 368 Hayti. Ag. imp., pkgs 4 Rifles, cs.... 2 Mf. iron, pkgs 52 Cartridges, cs 60 Liverpool. Cartridges, cs Iron, pcs.... Lamps, pkgs... Nails, kegs... Nails, bxs... Hdw., cs. Mf. cop., case. Mach'y, pkgs. Sew. mach., cs Sew. mach., cs 114 2,187 Spokes & h, cs 55 1,392 Clocks, cs... 295 5,462 Brakes, cs... 71 2,893 Lamps, pkgs. 24 1,234 Rifles, cs.... 2 200 Lamps, cs..... Porto Rico.

Mach'y, pkgs. 58
Ag. imp., pkgs 15
Iron safe..... 1
Hdw., cs..... 33
Sew. mach., cs. 5
Nails, kegs.... 106 Bristol. Hdw., cs..... Mexico. British North American Colonies. Tin, bxs..... 100 Sew. m'ch., cs. 20 Mf. iron, pkgs. 12 Clocks, cs... 20 United States of Co-lombia.

Iron, pcs.... 13 Cr'ge mtl., pgs 4 Gas fixt., cs... 2 Hdw., pkgs... 8 Ag. imp., pkgs 72 Cutlery, pkgs. 161 Gun, cs..... Sew. mach., cs Lamps, pkgs.. Revolvers, cs. Nails, kegs... Iron, bdls.... Steam launch. British West Indies. Iron, bdls.... 21 Steam laumeh 1 Gas fixt., pkgs 59 Hdw., cs.... 131 Mach'y., pkgs. 872 Pumps, pkgs. 4 Pistols, case... 1 Mf. iron, pkgs. 137 Gas fixt., cs... 12 1,150 1,124 145 659 914 British Possessions in Africa.

Central America. Mf. iron, pkgs. 28 Hdw., cs..... 20 Clocks, cs..... 12 Cutiery, cs.... Sew. mach, cs Cartridges, cs. Hdw., pkgs... Mf. iron, pkgs Tinware, cs... Lamps, pkgs. Rifles, case... Grindstones British Guiana. Carriages.... 6 1,400
Lamps, pkgs... 3 75
Sew. mach.,cs 4 100
Hdw., 2s.... 3 25
Nails, kegs... 100 200 Rimes, case... 1 Grindstones ... 69 Revolvers, cs... 1 Tin, bxs... 20 Wire, pkgs... 78 Nails, kegs... 39 Powder, lbs... 100 British Honduras. Mf. iron, pkgs 3 179
Nails, kegs... 90 253
Cutlery, cs... 10 80
Mach'y, case 1 100
Hdw., cs.... 65 647
Sew. mach., cs 3 85

Venezuela. Tinware, pkgs 4 Pl't'd ware, cs 7 Shoe nails, bxs 4 Br'ss g'ds, bx 1 Lamp, pkgs 68 Hdw, cs ... 173 Mach'y., pkgs 93 Ag. 1mp., pkgs 21 Havre. Ag. imp., pkgs 368 10,300 New Zealand.

Chili. Ag. imp., pkgs 76 Hdw., cs.... 150 Cartridges, cs. 9 Carbines, cs.. 1 Ag, imp., pkgs 76
Hdw., cs. 150
Cartridges, cs. 9
Carbines, cs. 1
Revolvers, cs. 2
La'p g'ds, pgs 50
Clocks, cs. 14
Pyistols, cs. 14
Pyistols, cs. 14
Coal, 10ns. 437
Nails, cks. 500
Millstone. 11
W'i'r wh'l, pgs 11
Tinware, cs. 8
R. R. sup. pgs. 42 Brazil. Cutlery, cs.... 13 278 Shoe nails, cs. 29 134 Mach'y, cs.... 2 1003 Hdw., cs.... 239 4,021 Pumps, pkgs. 2 40 London. Wire g'ds, cs. 8 457 Ag, imp., pkgs 194 9,640 Clocks, bxs... 189 3,179 Sew, mach., cs 1451 29,818 Pla'td w're, cs. 10 1,000

Wire, bdls., 112
Carey S.
Grindstones, cks., 21
Millstones, 32
Dolge H.
Steelware, cs., 2
Begraw, Aymar & Co.
Chains, cks., 8
Guental G. & Son,
Packages, 8
Herman Boker & Co.
Guns, cs., 19
Wire-cioth, cs., 7
Cutlery, cks., 5
Hardware, pkgs., 4
Livingstone W. & F.
Grindstones (cks., 24 Wire, cs., 3
Naylor & Co.
Cases, 3
Tyres, 12
Prosser Thomas & Son,
Tyre forgings, 4
Sanderson Geo.
Bundles, 14
Woodford W. O.
Bundles, o

Grindstones, cks., 2, Laughland & Co. Wire, bdls., 43 Lesher, Whitman & Co. Cases, 1 McCoy & Co. Mdse., pkgs., 2 Bundles, 91 Bars, 20 Cases, 6

Mdse., pkgs., 2 Moores J. P. Sons, Wads, cs., 12 Order, Rods, bdls., 167 Bundles, 171 Gun caps, cs., 11 Empty cartridge cases, cs., 4 Metals.

Bruce & Cook, Tin plates, bxs., 56 Terne plates, bxs. 694 Cort N. L. & Co. Tin plates, bxs., 1953 Black plates, bxs., 10 Canadian Bank of Com-merce. Markt & Co. Markt & Co. Packages, 8 Peters Bros. Mdse., pkgs., 9 Sanderson Geo. Scales, cks., 1 Spies, Kissam & Co.

merce, Tin, slabs, 508
Merchant & Co.
Antimony, cks., 7
Pratt Charles & Co.
Tin plates, bxs., 155
Phelps, Dodge & Co.
Black taggers, bxs.,
2000 Cases, 1 Sanger, Howard & Co. Cases, 2 Cases, 2 Squires H. O. Guns, cs., 1 Schoverling & Daly, Guns, cs., 3 Vogt J. H. Wire, cs., 1 Wiebusch & Hilger Hdw.

Tin plates, bxs., 1559
Societe de Credit Suisse,
Tin, slabs, 1183
Order,
Tin plates bxs., 2245

Co. Cutlery and hardware, pkgs., 30 Iron. Jansen John A. Spiegel, kilos., 150, Lang W. Bailey & Co. Bars, 570 Bundles, 20

#### FOREIGN.

FRANCE.

FRANCE.

(Moniteur des Interets Materiele.)

PARIS, March 3, 1878.—Metals.—Business in general awakems but slowly from the quieting influences which have held in check a genuine revival during the winter time, and we are afraid there will be no change for the better for at least six weeks to come, when, with the approach of the Exhibition, we expect greater animation here and in Northern France. Copper.—Only fine Copper seems to be wanted in Western Europe at present, Chili Bars being easier again. There is little transpiring here, and we note a slight giving way. We quote, deliverable at Havre: Chili Bars, 173,50; Common, do., 170; Ingots and Slabs, 173,50; English Best Selected, 180, and pure Corocoro Ore, 176,50. Marseilles is firmer and quotes as follows: Spanish in slabs, 167,50 francs the 100 kilos.; Red Tokat, 170; Small Refined Ingots, 180; Sheathing, 200,50; Bolts, 210, and Yellow Metal Sheathing, 200,50; Straits and Australian, 172, and English at Havre or Rouen, 170 francs the 100 kilos. At Marseilles, on the contrary, there is increased firmness; they quote Banca 185; Straits, 170; Slilliton, 170, 207,55 and English Refined, 150, Lead.—This metal remains ill-supported pretty much everywhere in Europe, but there has been no change here. We quote the same 40,75. Marseilles is weaker, and now quotes first tusion soft 44 francs the 100 kilos; Second do. 43; Sheet and Pipe, 49, and Shot 50. Spelter has been inactive here, but firm at 50,50 francs. Marseilles is steady and quotes as follows; Vielle Montagne Sheet, 67 francs the 100 kilos.; Southern, Jo., 65, all less 34; Old Remelted in Slabs, 45. Iron.—We can expect no favorable change till the general situation in Europe inspires more confidence. At Cherbourg several adjudications have come off yesterday, mostly for telegraph material, such as cable wire, 6c. In the Autenment, but a slight demand. At the North m

#### BELGIUM.

Revise Universitie).

Brussels, March 3, 1878.—Metals.—Pig Iron has remained quiet, but Merchant Iron is looking up and active. On our railroads Iron sleepers are gaining in popularity; thus the Grand Central will introduce on its line the Serres and Battig method. In Austria this system has produced good results on account of its simplicity. There has come off during the week an adjudication for the supplying of the State railroads with new passenger cars, and the Belgian Railway Material Company has on the occasion secured the furnishing of if first-class cars upon the American plan at 12,850 francs per car; of these 16 there are 8 saloon cars. Mr. A. Cabany, of Malines, has obtained the furnishing of 16 second-class ditric at Scop francs per car. Various other car makers will furnish the remaining 45 third-class cars the tween 6,540 and 6,546 francs each, all on the American plan. Some 17,500 tons Rails have also been ordered in Belgium, mostly for Italy, at 130 @ 140 francs \$100. The accounts from Charleroi are unfavorable. The only species of articles in the Iron line in demand there are Bar Iron, Sheet and small Rails for horse railroads. The Steel works are picking up somewhat. (Revue Universelle)

### (Borsenhalle).

(Borsenhalle).

Hamburgo, March 2, 1878.—Metals.—Business is picking up slowly as we approach the spring season. Copper.—No transactions of magnitude are reported. What little consumptive demand there is is easily filled at ruling moderate figures. There is no change in prices either here or at Stettin. Berlin is quiet. Good quality English and Aus tralian sells between 72 @ 77 marks the 50 kilos. Tin.—The German markets are weak. At Berlin, Banca is quoted 74.75 @ 75 marks the 50 kilos. and English Refined, 73 @ 73.50. We are quiescent here and nominally unaltered. Stettin reports no change. Lead.—This metal is irregular, and it is difficult to determine where prices will finally settle to. Berlin quotes Tarnowitz, Hartz and Saxonian 18.50 @ 19.30 marks the 50 kilos. Hamburg and Stettin unchanged. According to a telegram from St. Petersburg, Lead on the spot there commands 34.50 @ 35 roubles the 16, kilos. Spetter.—Nothing of special interest has happened in this metal, Berlin remaining 19.20 @ 10 marks the 50 kilos., and Stettin together, with this market unaltered.

(Koch & Vlierboom.)

#### SPAIN.

(La Provincia.)

(La Provincia.)

HUELVA, Feb. 27, 1878.—Copper.—The Rio Tinto Copper Mining Company has agreed with the Tharis Company, and Messrs. Masson & Barry, owners of the Domingo Company, its principal competitors in pyrites, to fix upon their product a common price. Out of Sco.coc tons annually imported into England these three mining concerns furnish about 650,000, they consequently monopolize the article. The agreement seems to be that the Rio Tinto Company is to sell 40 per cent, of what England will take during the year, and besides 80,000 tons on the continent. Since this understanding has been effected, the price of pyrites has improved, and the shares of the Rio Tinto Company have risen materially.

(Gilfillan, Wood & Co.) Giffulan, wood & Co.)

Simoapore, January 31, 1878.—The.—The market has been very steady; all the Malacca that has arrived having been sold at \$18.62½ per picul. Supplies have not been so large as usual immediately before the Chinese new year, and this has supported prices. The Straits' shipments this month to the United States are 450 tons, including 100 tons by sail to Boston.

ciete de Credit Suisse, Tin, islabs, 1163
Tin, ingots, 3507
Tin and terne plates, bxs., 254
Tin, bxs., 255
Antimony, cks., 15
Spelter, ingots, 763

expires March 11, 1898; \$40,000 has been subscribed and \$6000 paid in, and the privi-lege of increasing stock to the amount of lege of increasing stock to the amount of \$250,000 is reserved. Shares are \$100 each, of which Alex. M. Laughlin holds 100; Samuel Laughlin, 100; Alonzo Loring, 100; Mason W. Burt, 56; David Gutman, 50. This is formed to operate the Ohio City Mill. The negotiation for the purchase has been on foot for some time, and it is said that an offer of \$60,000 was made on Saturder but were withdrawn and after some fur. that an offer of \$60,000 was made on Saturday but was withdrawn, and after some further chaffering the property was bought for a sum between \$50,000 and \$60,000, the exact amount not being made public. The amount of cash required will be little, if any, in excess of \$70,000, it being understood that the indebtedness, secured by deed of trust upon the mill property, will be allowed to stand as long as desired on payment of the interest accruing on the bonds. It is the intention of the buyers to put the mill in thorough repair and start it as soon as in thorough repair and start it as soon possible.—Wheeling Standard, March 11.

#### Special Notices.

JENNINGS'S

### COMBINATION DISCOUNT TABLES.

This Book contains 1500 tables for single and combination discounts, such as 37½%, 45%, 25%7½%, 55%16%, 55%16%, 56%. &c., &c., which are so arranged as to be found without loss of time, and by their use either the Discount or Net on any autount of dollars and cents, from a penny to one million dollars, can be ascertained in a few seconds entirely by Addition.

ON.

MONTREAL March 4th, 1878.

OPINIONS.

MONTREAL, March 4th, 1878.

S. H. Jennings, Esq., Deep Eliver, Conn.—
DEAR SHR: The Book of "Combination Discount Them was duly received by us as per our order. The erriter has since its receipt given the Tables a variety of tests, as to their practicability, accuracy and usefulness for the purposes indicated in the preface of the work. As the result of these tests, we have much pleasure in giving it our hearty commendation, and think it is a work that should be possessed by everyone having occasion in their business to check or arrive at the net results of combination discounts from invoices.

from invoices.

As a conservative of the mental forces employed in
tedious calculations, it is worth many times its cost.

Yours respectfully

MORLAND, WATSON & CO.,

Hardware and Metal Merchants, MONTREAL, CANADA.

Per Will. SMAILL, Manager.

It will be mailed, postpaid, to any address, on receipt of the price, \$3. Currency may be sent by mail at my risk. Address

S. H. JENNINGS,

Deep River, Conn.

### Torrence & Co., General Shipping & Commission

Merchants. 127 Walnut Street, Philadelphia.

We are acting for a number of prominent manu facturers in finding a foreign market for their goods, and would be pleased to correspond with

#### To Nail Makers.

For Sale or Lease on reasonable terms,

### North Western Rolling Mills and Nail Works.

Situated at Dunleith, Ills., on-Mississippi River, and close to track of Ills. Cent. R. R. New and improved machinery in best condition. Scrap iron and coal to be had cheap. A splendid chance to practical man with moderate capital. Reason for selling, proprietor does not understand bust ess. Will exchange for good lands, iron lands pre-

Address
 T. WALKER, Proprietor, Lancaster, Wisconsin

### To Manufacturers and Jobbers of Hardware, Cutlery, &c.

Manufacturers and Jobbers, having surplus stocks or goods that from any cause are unsaleable upon which they wish to realize, or assignees who have stocks to dispose of, will find a cash purchaser by communicating with.

W. M. CALDWELL,

Job and Auction Lots of Hardware, Cutlery, &c., 102 Chambers St., New York.

WANTED.—A first-class business man famil-iar with machinery and manufacturing, caps-ble of handling large bodies of men, desires a respon-sible position. References satisfactory. Address, IRON AND STEEL.

#### Care of P. O. Box 813, Bridgeport, Conn. Wanted-A Partner.

#### in a foundry and machine business, already well es tablished. Locality splendid and healthy. A practical man with means is wanted to join

practical man who is already well establish CAR WHEEL FOUNDRY,

WANTED—By a young man of general busi-hess experience, a situation in any capacity that he may make himself useful. Ten years in the hardware trade. No objection to leaving the city. Office of The Iron Age, 83 Reade St. New York.

#### International Exhibition Of Agricultural Machines and Im-

plements, Hamburg, Germany, 1878.

Under co-operation of the Section for Agriculture and Horticulture at Hamburg, and the Union of German Manufacturers and Dealers in Agricultural Machines, an International Exhibition of Agricultural Machines and Implements will be held at Hamburg, Germany, beginning on the 13th of June. 1878, and ending the 17th of the same month. Circulars and printings to be filled out for sending goods to the said International Exhibition are mailed free of charge, upon application, from the office of the undersigned committee, at

No. 25 A B C Street, Hamburg.

Advertisements for the catalogue, to be published

No. 25 A B C Street, Hamburg.
Advertisements for the catalogue, to be published in grand octavo, will be accepted at 40 reichsmarks for the whole, 25 for the half and 15 for the quarter page, at the office of the committee. Payment to be made in advance. The Committee for the International Exhibition of Agricultural Machines and Implements, at Hamburg. 1878.

ALE. VON OHLENDORFF, President.
HERM. SCHEMMANN, Treasurer.
DR. RICHARD SEELEMANN, Sec'7.

### Special Notices.

#### JOBBING HARDWARE BUSINESS For Sale.

Obliged to retire from business on account of sick ness, we offer for sale our jobbing stock of Hardware, which is in prime merchantable condition. with fixtures complete, at a great bargain. Established in 1866. Stores occupied by us, best stand in city, can be leased at low price. Peculiar condition of jobbing trade here at this time presents rare chance for success.

Stock also offered for wants of merchants near Toledo at cost. Correspondence solicited.

HAMILTON & CO.,

Toledo, Ohio.

February 12, 1878. AUCTION NOTICE FOR 1878.

#### Bissell & Welles,

WHOLESALE AUCTIONEERS AND COMMIS-SION MERCHANTS,

No. 15 Murray Street, New York,

Would solicit from manufacturers and importers consignments of Hardware, Cutlery and House Furnishing Goods for their Spring Auction Sales, and are prepared to extend every facility for the disposing of surplus stocks for immediate cash. Having had long experience and a thorough knowledge of all classes of hardware, and our acquaintance being extensive, our sales are largely attended by city and country buyers, making them unusually successful. We refer to the entire hardware trade of New York.

# Price Book

Letters from customers.

"I observe your 'ad' in The Iron Age of 13th, In-closed I hand you \$12. Please send full bound book closed I hand you \$12. Please state at once."
BUELL LAMBERSON, 97 Chambers St., N. Y.

## FOR SALE.

### One 16x48 inch Double Slide Valve Engine.

An extra heavy machine. Will sell cheap for

The Bullard Machine Co., Limited,

14 Dey Street, New York.

SITUATION WANTED—BY A YOUNG man who has had several years' experience in the hardware business as salesman. Speaks both English and German. References satisfactory.

Address GEO. W. COBLENTZ,
COLUMBIAN, COL. CO., OHIO.

#### For Rent or Sale.

The Buildings, Machinery, large Lot and Wharf

### "CIRARD TUBE WORKS,"

situated in Philadelphia, Pa. Lot 153 feet front on Twenty-third street by 400 feet on Filbert street (next above market) to the Schuylkill River, opnext above market) to the Schuylkill River, opposite the Pennsylvania Railroad Wharfs. Main Building, 50x300 feet, three stories high. Large Out-buildings and Shedding, furnished with complete Machinery in perfect order for the manufacture of pipe; and all Machinery pertaining to a Machine Shop, two Steam Engines, Boilers, Hammers, Drilling Machines, Lathes, Shatting, Pulleys, &c. For terms and full particulars apply to the Complete Machines and Steam Engines, Boilers, Hammers, Drilling Machines, Lathes, Shatting, Pulleys, &c. For terms and full particulars apply to the Complete Machines and Steam Engines, Boilers, Hammers, Drilling Machines, Lathes, Shatting, Pulleys, &c. For terms and full particulars apply to the Complete Machines and Steam Engines, Boilers, Marines and Steam Engines, Boilers, Main Building, Steam Engines, Boilers, Marines, Drivers, Drivers, Marines, Drivers, Drivers, Marines, Drivers, Dr

#### AUSTRALIA.

AMERICAN HARDWARE CO., No. 9 William Street, M AUSTRALIA,

Solicit correspondence with American manufac-turers desirous of representation in the Australian Colonies. Consignments will have prompt atten-tion. References furnished.

SITUATION WANTED—BY A YOUNG S man as Superintendent or Foreman in a Machine or Die Works. Is a practical die workman. The West preferred. Salary moderate. Address "A. J. B.," Office of The Iron Ags, 83 Reade St., New York.

### DROP FORGINGS.

The TRENTON VISE & TOOL WORKS, Trenton, N. J., having increased their facilities, are now able to do all kinds of

Iron and Steel Drop Forgings in quantities to order at reasonable rates. HERMANN BOKER & CO., Proprietors, 101 & 103 Duane St., N. Y

### SPECIAL NOTICE.

The undersigned offer their services as agents to American Producers of Metals. They represent foreign brands of Eine, Russia Iron, Hoop Iron, Window Glass, Cutlery and Guns.

LOUIS WINDMULLER & ROELKER, 20 Reade Street, N. Y.

EXPORT.—MANUFACTURERS DESIRING to export to Russia are respectfully solicited to send their illustrated lists and lowest C. O. D. prices to OSCAR W. MADDAUS in Riga, Russia. Represented in New York by E. Bilhuber, 132 Nassau St.

# SPECIAL NOTICE.

The undersigned, in view of the Paris Ex-hibition of 1878, begs to inform his friends that he continues to make translations of Catalogues, Prices-current, Circulars, Correspondence, &c., from and into the

FRENCH. GERMAN

and SPANISH.

and that he bestows special attention upon a strictly correct rendering of Technical Expressions in matters relating to Machinery, Metallurgy, Hydraulies, &c. The very bes reference will be furnished from leading manufacturers in this city, Philadelphia and elsewhere, for whom he has translated. If desired, estimates will be procured for the setting up, electrotyping and printing of catalogues, &c., in the above languages

C. K.IHCHHOPF,

Metal Reporter of The Iron Age,
83 Reade St., New York,

### Special Notices.

# The Sherman Process Company, "SHERMAN" PATENTS,

Is now ready to issue Licenses to use the said Process

under a Royalty. The Process is used to great profit in the Puddling Furnace, Martin-Siegens Furnace, Bessemer Converter, Crucible, and for

Gray Iron Castings. The use of the Process does not involve any changes in the furnaces or in the present manner of working them, nor does it increase the labor, but on the contrary saves material, fuel, labor and

The chemicals used are not expensive, their cost not exceeding 25 cents per ton of product, and the charge for royalty is placed at a low price so as to bring the Process into general use.

By the use of this Process a large percentage of the cheaper grades of irons and steels can be made into a good merchantable product.

Irons which have been found impossible to use ither alone or in muxture with other irons are now eing profitably used by means of this Process.

It improves the working of both poor and good irons or steels, a better product being obtained by its use than is possible without it. It makes the molten metal more fluid and the product more sound, homogeneous and ductile.

It makes less skull and scrap and less waste in he finished product.

For castings that are to be tapped and have threads cut upon them, it allows a close, strong iron to be used, leaving it soft for the tool to readily cut.

By the use of this Process in the Bessemer or Martin-Siemens furnace, good steel rails can be nade from a mixture of from 30 to 60 of old iron alis and the balance good stock. Thousands of ons of steel rails made by this Process, as above ire now being used in France.

The Process will be demonstrated without ex-pense, at the works of parties applying, and the amount of royalty to be charged for its use will be furnished upon application to

The Sherman Process Co., No. 9 Pemberton Square.

BOSTON, MASS. See page 17 of The Iron Age, of Oct. 25, 1877.

# Notice of Removal.

29 CHAMBERS St., New YORK, Jan. 1, 1878.

I beg to advise that I have removed from Nos.

10 and 10.3 Duane street to No. 29 Chambers street,
where samples can be inspected and communications addressed.

Yours respectfully,

ASLINE WARD,

Agent for Geo. Wostenholm & Son, "Limited," Washington Works, Sheffield, and Fred'k Ward & Co., 37 George St., Sheffield. . O. Box No. 1631, New York.

### Inventors of articles in Builders' Hardware desiring to dispose of same by sale or on royalty, on reasonable terms, may address IRONMON\_ER. Office of The Iron Age, 82 Reade St., Ner-York

A Practical Treatise

#### ON THE MELTING OF IRON,

With a description of the

Founding of Alloys.

ALSO

Of all the Metals and mineral Substances used

ART OF FOUNDING.

COLLECTED FROM ORIGINAL SOURCES. BY EDWARD KIRK,

Twenty-one Illustrations. PRICE. - - - \$2.50.

PREFACE.

In ten years spent at molding and in the foundry business, and four years in traveling through the United States, in introducing a chemical flux for iron, I have seen the lack of regularity, and the bad effects of it, in the construction and management of foundry cupolas and furances, and the want of a guide or rule for their construction and management. At the earnest solicitation of many foundrymen. I have undertaken the publication of this small work, with a view of throwing some light upon the subject of melting iron, and the construction and management of cupolas and furances—a subject that always seems to be enstrouded in mystery.

All the theories that I have advanced in this work are from notes taken from practical observation while visiting different foundries, in the flux business, and from a chemical knowledge of the laws of chemical affinity of one element for another. By giving a rew explanations of causes and effect I hope to establish some regularity in the melting of iron for foundry purposes.

I have also added a few recipes for the forming of alloys, and a general description of all the metals, minerals and gases used in the art of founding, as well as their application, all of which I have endeavored to place before the reader, elothed in popular language, so that all who can read may fully understand this interesting subject; for this reason, I have endeavored to avoid using any of the chemical and technical terms which are usually applied to this subject, as they often have a tendency to embarras, rather than to enlighted, the reader.

Sent by mail, postpaid, on receipt of \$2.50, by

DAVID WILLIAMS,

83 Reade Street, New York,

# Trade Report.

Office of The Iron Age, Wednesday Evening, March 20, 1878. The past week has been without event of especial importance in financial circles. There are still considerable receipts of bonds from abroad, and unless something should occur to check this movement, there will be a considerable drain of gold coin for export. General trade is still very unsatisfactory. and the prospects of a profitable spring business are still uncertain.

The money market shows increased firmness. Borrowers on call pay 4 @ 7 per cent. The rate of discount on prime mercantile paper is 41/2 @ 61/2 per cent.

The gold market shows more firmness than was reported last week, with a slight advance in the average quotation. The following table shows the extreme daily of anger the premium fluctuations :

												hes		Lowest.
Thursday						 						ioi	8	KOK
Friday						 						IOI3	4	101
Saturday.							 					1013	V8	1014
Monday			٠									ron3	Vig	101/4
Tuesday					 				٠			ioi!	4	TOI'S
Wednesda	3	7.		 								tors	4	1011/8

The government bond market has been active and prices steady; State bonds are the closing quotations of governments:

unsettled, but mostly active. The principal lor, hundreds of people passing through from dealings have been in Lake Shore, D., L. & am early hour in the morning to take W., Western Union, St. Paul, Northwest, a parting look at the features. The parlor Pacific Mail, and New York Central. We was literally packed with floral tributes. terisk :

age. A statement of actual condition at the 000,000 gold, and less than \$30,000,000 legal-tender notes. The surplus reserve is up to \$16,100,821. The following is a comparison of the averages of the last two

The movements in foreign trade are shown in the following tables:

#### IMPORTS. For week ended March 16:

Total for week. Prev. reported.	x876. \$8,3x4,247 65,873,385	1877. \$7,546,561 61,303,163	1878. \$6,776,024 50,532,247	
Since Jan. 1 Included in	the impor	ts of gen	eral mer-	
chandise were	articles v		ollows:	

		Quantity	
Anvils	**********		\$1,612
Brass goods			4,212
Bronzes			x, x98
Chains and and	hors	II	436
Cutlery		84	26,380
Gas fixtures	***********		51
Guns			3,192
Iron, sheet, tons		6	500
Iron, other, tons			19,923
Metal goods			12,150
Needles			8,422
Old Metal			5,582
Platina			6,565
Per. caps		7	937
Saddlery		8	1,086
Steel		558	8,172
Silverware			291
Tin, bxs		10,180	51,230
Tin, 7,367 slabs.		755,116	112,801
Wire			594
Zinc			436
EXPOR	TS, EXCLUSIV	TE OF SPECIE.	
For week en	ded March	19:	
	1876.	1877.	x878.
For the week Prev. reported	\$4,410,423	\$4,749,473	\$8,154,874

For the week Prev. reported	1876, \$4,410,423 46,041,867	\$4,749,472 51,905,530	1878. \$8,154,874 67,032,911
Since Jan 1	\$50,452,290 EXPORTS OF		\$75,187,785
For week en		h 16:	. \$240.611

Total for the week	· \$249,011
Previously reported	2,195,344
Total since Jan. 1, 1878	\$2,444,055
Same time in 1877	3,212,177
Same time in 1876	10,206,865
Same time in 1875	. 15,047,063
Same time in 1874	6,692,063
Same time in 1873	12,843,684
Same time in 1872	3,937,759
Government bonds at the close we	re quoted
as follows:	
Bid.	Asked.
U. S. Currency 6's 1185/	110
U. 8. 6's 1881 registered	1071/8
U. S. 6's 1881 coupon106%	107
U. S. 6's 1865 new reg	1045%
U. S. 6'8 1865 cou	104%
U. S. 6's 1867 reg	107%
U. S. 6's 1867 cou	1071/8
U. S. 6's 1868 reg	109%
U. S. 6's 1868 cou	130
U. S. 10-40 reg	1051/4
U. S. 10-40 coupon105	105%
U. S. 5'8 1881 registered10436	104%
U. S. 5'8 1881 coupon 10436	
U. S. 41/2's 1891 registered	10378

U. S. 4% 8 1891 registered	1037
U. S. 41/2 's 1891 coupon	103
U. S, 4'8 1907 registered 1001/2	1005
U. S. 4's 1907 registered	102
The following were the closing quo	tation
of active shares:	
Bid.	Aske.
Atlantic and Pacific Telegraph 19	195
Chicago and Northwest 415%	413
" Pref 6934	697
Chicago, Rock Island and Pacific1021/2	1025
Chicago, Bur. and Quincy	TOI %
Col., Chic. and Indiana Central 256	3
Clev., Col., Cin. and Ind 29	293
Cleveland and Pittsburgh 72	723
Chicago and Alton 60%	70%
Pref 08	100
Consolidation Coal	28
Canton	167
Delaware, Lack. and Western 49%	50
Delaware and Hudson Canal 40%	50
Express Adams	108
American	49
United States	50%
wens, rargo & Co 86	865
Erie 101/4	10%
Harlem143	148
Hannibal and St. Joseph 103/	105
Frei 23%	23%
Illinois Central 75	753
Kansas Pacific 63/4	.7%
Lake Shore 6534	655
Michigan Central	64%

***************************************	
Morris and Essex 71¾ Milwaukee and St. Paul 40¾	72
Pref 725%	723
Mariposa	2
New York Central2057	1065
New Jersey Central 131/4	14
New Jersey Southern 11/2	81
Ohio and Mississippi 8	81/4
Pacific Mail 18% Panama 127	181
Pittsburgh and Fort Wayne 891/2	130
Quicksilver 17	18
" Pref 28	3.8
St. Louis and Iron Mountain 678	8
St. Louis Kansas City Northern 41/4	4%
	223
Toledo, Wabash and Western 1414 Union Pacific	725
Western Union Telegraph 7834	79
CENTRAL HARDWARD	

same as at our last writing. Few changes 1875. of importance have occurred in values, and the demand for goods is not as active as it is Deep and Common Stamped Tin Ware, for reasonable to expect in March.

announcement of the death of Henry Disston, Stamped Ware Manufacturers' Associawent to press, the funeral had not taken place The following particulars will be intere t ng to many of his old friends in the trade: At held a meeting in this city to-day, at which to many of his old friends in the trade. And to o'clock this morning the friends and relatives met at the residence in North Broad street, Philadelphia, but long bement, and, if possible, effect a remedy at an entry and if possible, effect a remedy at an entry and if possible, effect a remedy at an entry and if possible, effect a remedy at an entry and if possible, effect a remedy at an entry and if possible, effect a remedy at an entry and if possible, effect a remedy at an entry and if possible, effect a remedy at an entry and if possible, effect a remedy at an entry and if possible, effect a remedy at an entry and if possible, effect a remedy at an entry and entry fore that hour the house was thronged early day. The goods, the prices of which by hosts of the personal friends of the deceased, members of the Masonic fraterdull; railway mortgages strong and in good nity, Sons of St. George and representademand for investment. We give below tives of the charities to which Mr. Disston in life contributed. The remains reposed in The stock exchange has been feverish and a rich casket, which was placed in the pargive below the closing quotations of active Those ordered by the family were of a shares:

neat and costly design, and consisted of The weeklystaktement of the New Yor a column of white flowers 5 feet in hight banks shows, as was expected, a further and entwined by a wreath of tuberoses and large gain in the specie average, which is japonicas. The column was surmounted by now up to \$39,545,900, or more than \$9,000,- an urn, and upon its base was an inooo higher than the legal-tender note aver- scription in blue immortelles, "Our Father." Another column presented by other relaclose of the week would probably show that the banks hold considerably more than \$40,000,000 gold, and less than \$30,000,000 base was the simple word, "Rest." Mrs. Disston's offering was a floral pillow of white, covered with mignonettes representing lace work. At each end were tassels March 9. March 16. Differences.

Loans.....\$246,320,800 \$242,978,900 Dec. \$3,341,900
Specio......37,116,900
Specio.....37,116,900
Deposits....215,155,900
Circulation...19,885,100
The movements in ployes of the Disston Saw Works. Toward ten o'clock it became necessary for a force of policemen to regulate the throng in front of the house. It is estimated that the remains were viewed by about 5000 persons. The pall bearers consisted of two members from Richmond Lodge, A. Y. M., two members of the Society of St. George, two merchants and two representatives of the saw works. The services took place in the Oxford Presbyterian Churc's which was crow'el to its utmost capacity. Rev. Drs. Robbins, Newlin and Sheppard participated. The interment took place at Laurel Hill.

The following circular will be issued under

date of 21st inst. :

Office of the Keystone Saw, Tool, Steel and File Works.

In announcing to you the sad inteillence of the death of our honored father, the senior partner of the firm of Henry Disston senior partner of the nrm of Henry Disston & Sons, we deem it just and proper to assure you that the business will be conducted upon the same principles with which he established it, and that it shall be our earnest endeavor to maintain that high standard of perfection which he guarded with jealous anxiety and whose preservation he so fre-

quently impressed upon us.

As he had delegated to the junior partners that branch of the business which his experience and judgment deemed best adapted to the capacity of each, he was enabled to transact his vast and extensive operations with harmony, facility and success, and to obtain that relief from toil and care which

his declining health imperatively demanded.

The responsibilities of the firm have conently for some years devolved upon us. and we guarantee, with every confidence in our ability to sustain our pledge, that, with our increased and increasing facilities, the intelligent and skilled labor which we have ever employed, the character and standard of our goods shall be maintained, and the same liberal policy which has hitherto marked the conduct of our business shall be

continued and extended.

To recall with grateful acknowledgments the aid and assistance extended to him in his early struggles, was with him a frequent To merit a continuance of the confidence so implicitly reposed in him, and to preserve that reputation which he has left us as his most valuable legacy, will be our steady and constant effort.

Very respectfully. HAMILTON DISSTON, ALBERT H. DISSTON, HORACE C. DISSTON. PHILADELPHIA, March 21st, 1878.

The demand for Nails continues light and unsatisfactory. There is no change to note in prices. We quote as before 10d. to 60d., \$2.50, net, at which price makers are firm in their views.

Lloyd, Supplee & Walton present in their advertisement on page 24, an illustration of 'The 1878 Pennsylvania Lawn Mower," to which we invite attention. In a circular they say: "This machine presents all the advantages of a light and durable Lawn Mower, and we believe has good qualities found in no other Mower upon the market. It is the lightest machine in use, and all that is Pa., have issued the following price list for necessary to satisfy our customers of its superiority is to place it in competition with Easton Pattern Coal Scoops, which is sub-

Mower are made, which are described in the the Patent Corrugated Strap at an addi-following price list. Each machine is tional cost of 50 cents, net, per dozen:

and Coltness, \$25 (@ \$26.50. packed in a box, the handles, as with all other machines, being shipped loose. They are offered to the trade in lots of 12 machines or over, at discount 30 per cent.

THE 1878 PENNSYLVANIA LAWN MOWER. Price List.

Price List.

Price List.

12-inch width of Cutter, 8-inch driving wheels, weight 33½ lbs.; can be used by a lad..each..818
14-inch width of Cutter, 8-inch driving wheels, weight 34½ lbs.; can be used by a lady..each 20
16-inch width of Cutter, 8-inch driving wheels, weight 36½ lbs.; one man size....each 22

The Russell & Erwin Manufacturing Company have issued, under date of 1st inst. their discount sheet, No. 7, to apply to their The condition of the market is much the Catalogue of General Hardware, Vol. 3.

We have omitted our usual quotations of reason that, owing to the withthe When our first page, on which we make the drawal of some of the members of The tion, the combination is broken, and prices are irregular. The manufacturers were heretofore controlled by the association, were only those goods known to the trade as the "Manual" goods.

The Stanley Works, New Britain, Conn., and No. 79 Chambers street, New York, have issued under date of 20th instant, the following revised discount sheet. The changes from previous quotations (which are all reductions) are marked with an as-

CIRCULAR No. 85, March 20, 1878.

STANLEY WORKS. Advances and Discounts on Price List of October, 170, and Supplements of Feb. 5, 1874 and July 1, 175. Terms, net cash 30 days. Payable in New ork current funds. Prices subject to changes of the market without notice: Catalogue pages.

A & S, Bronzed Capped Butts.

Supp't, "Loose J'nt Butts with Ac'ns.

Supp't, "no

B to 12, "Narrow Butts, &c.

B, Bronzed Light Narrow Butts, Discount Comments of the Comme Inside Blind Nutts.
Loose Pin.
S & 7, Bronzed Parliament Butts.
S & 15, Bronzed Flush Bolts.
7, Bolts, Chain.
Cottage, Cast.
Wrought Barrel, B. K. New List.
F. Bolts Chain.
Cottage, Cast.
F. Wrought Barrel, B. K. New List.

6. "T.K. 55.
Supp't Bolts, Light, Wrought Barrel 6. Brass Knob, New List.
Rough Bronzed L't Barrel Bolts, List of Brass Knob Light Barrel Bolts, List of Brass Knob Light Barrel Bolts, List of Brass Knob Knob Lagit.

Knob Lagit.

Knob Lagit.

Barrel Bolts.

7, Bolts.

Wrought Brass Barrel.

Tinned Bolts.

7, Bolts.

7, Bolts, Canada Por. and Min. Japanned...

Plated...

Plated...

5 

Joint. ,\*Butts, L't Narrow, Smooth Bright Iron. \*Butts, Narrow 3, \*Butts, Narrow, Smooth Bright 1701.

3, \*Butts, Back Flaps.

0, \*Butts, Table.

0, \*Butts, Inside Blind.

2, \*Butts, Chest,

4, \*Butts, Broad.

5, \*Butts, Loose Joint.

Butts, Reversible (List Loose Joint).

9, \*Butts, Light Inside Blind, Smooth Bright Iron.

Corner Irons.
Hammers, Carpet.
Handles, Flush Chest and Drawer.
"Wro'c Chest, "Stanley Works", Add
"Austin Beebe", Add
"Lifting and Coffin.
Hasps, Hooks and Staples, Wrought.
Staples, Wrought.

Hinges, H'y and Ex. H'y T. "Hart's Pat "Hinges, Strap and T Hinges, Long Chest. Hinges, Long Chest. Hinges Hasps, Common Staple. Crate Hasps, Pat. Swivel Staples. 46, Hinges, Bulk Shutter and Flask. Norwich Blind. Hasps. Plate and Raised Blind. Rolled Plate and Raised Japanned Screws. Japanned Screws... , Staples, Floor, Bolt and Lock... , Steamboat Shutter Fasts...

Hubbard, Bakewell & Co., Pittsburgh,

they made reside." Three sizes of this Lawn trade. They supply these goods also with terms which are withheld.

I. L. & Co., Cast Steel Anderson Ex. Iron I, Wood's Iron... Half Polished, 50¢ less per doz. than these prices

orth Easton Pattern.—Full Polished. , B. & Co., Cast Steel No. 2, Anderson Extra Iron No. 2, Woods Iron.

Half Polished, 50c. less per doz, than these prices. Black, Of their improved Corragated Strap Scoop

Roy & Co., manufacturers of Wrought Iron Butts, Hinges, &c., Troy, N. Y., have established an agency in this city with Fernald & Sise, No. 100 Chambers street, who will carry in stock a full line of their goods, and fill orders from store or factory at factory rates. Roy & Co. inform us that they have added to their assortment of Butts, Blind, &c., and that all Butts now made by them are made from bright iron.

they have in stock a full assortment of Crooke & Co.'s goods.

The Ohio Tool Co. have issued, under date of 7th instant, the following revised discount sheet. Horace Durrie & Co., No. 97 Chambers street, are their agents in this city, and carry in stock a full assortment of these goods.

OHIO TOOL COMPANY'S DISCOUNT SHEET Catalogue of 1877. COLUMBUS, O., March 7, 1878.
Former Rate Sheets and all Price Arrangements and Terms are hereby made void.

Plows of all kinds.

Plows of all kinds.

Bench Planes, stamped "Scioto Works".

All goods from No. 13a to 1824, inclusive, of Catalogue.

Coopers' Wood Tools.

Bench and Tail Screws.

20 Hand Screws and Cabinet Clamps.

20 Hand Screws and Cabinet Clamps.

20 Turned Wooden Ware, Saw Frames and Rucks.

Coopers' and Carpenters' Edge Tools and Chisels.

Planes without Irons

riane irons.
Planes without Irons.
Planes with English Irons.
Tress Hoops.
Patent Auger Handles.

payable here in bankable funds, or New York Exchange; subject to Sight Draft, without notice, if not paid at the expiration of the time stated. Bills of lading accompany all invoices, and we have contracts with the Railroad Companies to all principal points at Special Rates of Freight.

#### IRON.

American Pig.-The market continues very dull, due in a great measure to the differences existing between the views of makers and consumers regarding values. We cannot report the slightest improvement in its tone since our last writing, although makers of prime Lehigh brands do not complain of a lack of inquiry. The only transactions we hear of are the sale of 500 tons No. 1 and 500 tons No. 2 North River Iron and 4000 tons Thomas Iron, for Pipe making, all on private terms.

any other machine in the town in which ject to discount 40 and 5 per cent. to the uring the week and was sold from dock on rency.

and Coltness, \$26 @ \$26.50.

Rails.-No transactions either in Iron or Steel Rails are reported. There is some inquiry for Steel, but as the mills are generally reported as having orders enough on their books to keep them running full time up to July next, there is no disposition manifested to accept more orders unless at rates entirely satisfactory to the makers. We continue to quote: Steel Rails, \$43 @ \$44, and Iron, at mill, \$32 @ \$37, according to quality, terms of payment, &c.

Old Rails.-There is some inquiry for Old Rails and sufficient of this stock on the market to fill all requirements so far as indicated, but, as in the case of Pig Iron, con-sumers and holders are divided in their views, and in consequence no transactions are reported. We quote \$18 @ \$19, which is nominally the price here.

Scrap.—In the absence of business, we quote as before: \$22 for No. 1 Wrought

#### METALS.

Copper.—The market remains very quiet, sales not exceeding 200,000 pounds for the week at 17¢ @ 17½¢. Baltimore is nominal at 17¼¢. Nothing is going on in futures. As per cable advices, the London market has declined 10/, Best Selected being quoted has declined 10/, Best Selected being quoted £71 and Chili Bars £64, 10/. Accounts from England by mail are to the 7th inst., when they quoted Tough Ingots, £71; Best Selected, £72; and Sheets and Bolts, £76, adding the following: "Copper remained steady till about a week ago, when a better demand sprang up. Smelters are now well supplied with orders, and firm at the advance." The manufactures of Copper and Yellow Metal continue in moderate request at previous prices. We quote: New Sheathing Copper, 26¢; Braziers, 28¢, and Bolts, 28¢; Yellow Metal Sheathing, 20¢; Yellow Metal Bolts, 25¢, and English Yellow Metal Sheathing, 15½¢ in bond.

Tin.—There is a better feeling observable,

they say:

The attention of the trade is especially called to our improved Corrugated Strap Scoop. The advantage of the corrugated strap for coal shovels and scoops, from its not breaking at the junction of the handle and blade, is so great that parties who use largely of either of these classes of goods large lines: Straits, 14½¢; English largely of either of these classes of goods will have no other after one trial. Banca, 17½¢, all gold. The shipments from Singapore this month are only about 3000 slabs. The statistical position of the metal on this side is gradually improving, the total afloats from the Straits having been reduced to about 15,000 slabs, due here up to the 1st June next. The Singapore and Australian markets are at present above the parity of New York and London, a circumstance which while it lasts can hardly fail to restrict shipments to America and England. The shipments from the Straits and Australian Light Narrow, Light Inside Blind, Loose Pin The shipments from the Straits and Australia tralia to Eugland this year are thus 2200 tons, against 2000 tons We are informed by Fernald & Sise that the corresponding period of last year, hey have in stock a full assortment of being a decrease of 700 tons, which would seem to indicate that the production of Tin will certainly be curtailed at ruling low prices. We do not hear of any material change in prices in London and Liverpool since our lastreport. They write from Eng-land under date 7th inst. to the following effect: "A decline took place to £67 for English Ingots, but there is now more firmness, and the figures below are the lowest. Several smelters want even more. Straits and Australian touched £63 at one time, but and Australian touched £63 at one time, but are now firm at quotations. We quote: Ingots, Lamb and Flag, £68; Bar ditto, £69; Grain Bars in barrels, £74; Granulated ditto, £76, and Straits in warehouse, £64. 5/."
Tin Ptates have become very quiet. We quote large lots, ordinary brands, gold, per box: Charcoal Bright, \$6.00 @ \$6.25; ditto Ternes, \$5.75 @ \$6; Coke Tin, \$5.25 @ \$5.50; Ternes, \$5.25. In writing from Liverpool under date 7th inst. they express themselves as follows: "The market is very dull, and makers are so anxious for orders that purchases can be made at 6d. @ 9d. per box, reduction on prices four weeks since. Few reduction on prices four weeks since. Few of the makers are heavily booked, and as a good many parcels belonging to speculators are on the market, they have to accept low figures for the orders offering." Lead .- The business done has been more

of a retail nature, not exceeding, all told, we presume, 100 tons, at 3.85¢ @ 3.90¢, currency. All old stock is held back, and current production is not up to current consumption: hence there will soon not be Lead enough, unless the old holders come out and begin to sell. The curtailment of production which is going on is thus far limited to Utah, where all furnaces except three are shut down. Meanwhile the St. Louis com bination people are, we are told, busy in swelling the number of producers adhering to their plan, and successfully so. There are thus enough elements at work to impart strength to the market, if business would but chime in and bring about a genuine and lasting revival. As the matter stands, sellers are asking more money than buyers are yet willing to give, not being compelled to parchase. If buyers were forced into the market at this juncture, they would have to pay a great deal more than if the sellers came to them. A week hence the situation will probably be a better defined one, and we shall then be able to form some judgment as to the immediate future which awaits this metal From England they write, under date 7th inst., as follows: ' mand has been unusually small, and prices have fallen 15/per ton during the month. At present it appears as if any further change would still be downward." Manufactured is in moderate request at the late reduction. We quote Bar, 5½¢; Pipe, 6¢; orth for Sheet, 6½¢, and Tin-lined Lead Pipe, 15¢; all less 10 ½ cent. to the trade.

Spelter and Zine,—A sale of 20 tons choice Western Spelter, to be delivered

quote: Foundry No. 1, \$18 @ \$18.50; East, is reported at 5\%\psi\psi\, currency. We quote the ranges of Common Domestic 5\%\psi\psi\ @ \\$16 @ \\$16.50.

Seatch Fig.—The demand for Scotch \$16 @ \$16.50.

Scotch Pig.—The demand for Scotch selling at  $8\frac{1}{2}$ \$\phi\$ @ \$\phi\$, currency. Foreign remains nominal at  $5\frac{7}{2}$ \$\phi\$ @ \$\phi\$, gold. Sheet Sinc.—Sheet is very quiet. Mosselman is

Nickel.-The market is quiet at nomin ally \$1.30 @ \$1.50, currency, P pound.

Antimony .- The reduced stock of Antimony restricts business in it. There is no difficulty in getting 13¢, gold, for all that is left of Cookson's brand, which remains unprocurable at London at present even at £52.

#### COAL.

The state of the trade is not at all en The state of the trade is not at all encouraging for dealers, many of whom declare that so dull a season has never been known. Only a small amount of Coal is coming to market, but even this seems to be more than is required. Yesterday the Board of Control, with an inscrutable absurdity of action, advanced the price of Coal 25¢ % ton on all the larger sizes and 15¢ on Chestnut. Some circulars are already issued giving the new prices, while others will be sent out to-day. The effect of this upon the The effect of this upon the sent out to-day. The effect of this upon the market will probably be nil. The tonnage up to the present date is still largely behind that of last year, but remains greatly in excess of the consumption. This, of course, makes the prices practically nominal.

#### PHILADELPHIA.

Office of The Iron Age, 220 South Fourth St., PHILADELPHIA, March 19, 1878.

Business continues dull and inanimate, but there is a steadier feeling, under the impression that values have reached bottom. There has been very little new business entered since the first of the year at the large machine shops, but inquiries are springing up again, and there is a fair prospect of some improvement at an early date. The Baldwin Locomotive Works have just closed a contract for seven locomotives for a Brazilian road and several for local roads. There are also inquiries for a considerable number, and orders for 30 or 40 will probably be placed during the current month. There is a fair prospect for bridge building also, and on the whole the outlook indicates a tolerably healthy business during the next month

Pig Iron.-The movement during the week has been slow and dragging, and it has required considerable effort to effect any thing like satisfactory sales. Buyers are evidently not afraid of an advance, and as consumption shows no perceptible increase the market is getting into a very dull and apathetic condition; in fact, the depression appears to be greater now than at any pre-vious time within the past two years. As a rule, there is no change in prices, although we hear of occasional transactions in which the financial needs of sellers have compelled them nancial needs of sellers have compelled them to make concessions. It is believed, however, that any permanent decline in prices is quite impossible, and if the product of the furnaces cannot be marketed at pres-ent prices many furnaces will be "blown out." The large sales reported last week out." The large sales reported last week have to some extent relieved the market, but if the inactivity of the past few days continues any length of time stocks will accomplished and continues and seal are described. cumulate and compel producers to acco date themselves to the requirements of the trade. The immediate outlook is decidedly trade. The immediate outlook is decidedly gloomy, but with the opening of navigation it is hoped there will be an improved demand, sufficient, at least, to maintain the present rate of production. We quote: No. I Foundry, \$18.50 @ \$19; No. 2 do., \$17 @ \$17.50; Gray Forge, \$16.50 @ \$18; Mottled, \$15.50 @ \$16. Market quiet.

B'ooms.-The market shows no improve ment, and prices are almost nominal, as follows: Sunken Scrap Blooms (2464 lb), \$42 @ \$45; Northern Ore Blooms (2200 lb), \$37 @ \$39; best quality Charcoal Billets (2240 lb) for wire and steel purposes, \$50 @ \$55; Bars, do., \$65 @ \$67.50; Sheet Iron Blooms, cornered (2464 lb), \$60 @ \$62.50; Cold-blast Charcoal Plate @ \$62.50; Cold-blast Charcoal Plate Blooms, \$55 @ \$57.50; run-out Anthracite,

\$50 @ \$52.50. Muck Bar.-The market continues dull and sales are usually in small lots at about the following quotations: Soapstone, \$30; Boiled on Ore, \$33; extra quality for Hoops and Rods, \$35, all Philadelphia de-livery. Western manufacturers have been offering Bars in this market, but we cannot hear of any sales

Plate and Tank Iron.—The market continues dull, and there is no apparent improvement, although there is a moderate te an increased demand for all kinds of demand for small lots. The mills, as a rule, manufactured goods within the next few demand for small lots. The mills, as a rule, are very quiet, and we cannot hear of any which have orders of importance on hand; prices are, therefore, weak and light, and in view of the very heavy emigradrooping. although nominally unchanged, hand; prices are, therefore, weak and drooping, although nominally unchanged, as follows: Common Plates, 2.3¢ @ 2.4¢; Tank Iron, 2.3¢ @ 2.5¢; C. No. 1, 2.4¢ @ 2.6¢; Shell Iron, 2.75¢ @ 2.9¢; Flange Iron, 3.75¢ @ 4¢; Solid Fire Box, 4.85¢ @ 5¢, and Best Bloom, 5.5¢ @ 6¢.

Sheet Iron .- Business has fallen off a good deal during the past few days, and as stocks have accumulated largely some of the manufacturers are disposed to close their mills unless there is some early improvement in the demand. Prices are very weak, and although we repeat last week's quotations they are almost nominal, and large concessions would be made to buyers of good sized lots. We quote jobbing lots: Refined Sheet Iron, No. 26 to 28, 3.6¢ @ 3.7¢; No. 22 to 24, 3.4¢ @ 3.5¢; No. 16 to 21, 3.2¢; Best Bloom Sheets, No. 26 to 28, 5.4¢ @ 5.5¢; No. 22 to 24, 5.2¢; No. 16 to 21, 4.9¢ @ 5¢; Common Red Plates, 5-16 to 18, 2.4¢ @ 2.5¢; Refined Plates or Blue Annealed, 5-16 to 18, 2.6¢ @ 2.7¢; American, R. G., 5 16 to 18, 3.2¢ @ 3.3¢; Best Bloom, 5-16 to 18, 4.9¢ @ 5¢; Philadelphia Russia, 7¢ @ 7.5¢; A. Patent Planished, 10½¢.; B. Patent Planished, 9½¢; Bloom Galvanized, 40%; Refined Gal-

Bar Iron .- The condition of the Bar trade is fair and somewhat better than other branches of the Iron trade, but there is not branches of the Iron trade, but there is not sufficient demand to warrant predictions reaching far into the future. The best brands sell freely at 2¢, but other descriptions are difficult to move at comparatively low rates. Within the past few days Western Iron has been offered pretty freely and it seems likely that there will be renewed competition from that quarter, although we convolted the product of the product of the present of any immediate change for the seems likely that there will be renewed competition from that quarter, although we convolted the product of the present of of t and it seems likely that there will be renewed compelition from that quarter, although we cannot learn of actual sales being made. It causes an uneasy feeling, however, and the immediate outlook is not content of the sales that usual at this particular time; hence, notwithstanding the small and the sales are only running single turn, the consumption is much less than usual at this particular time; hence, notwithstanding the small are the sales and the sales are only running single turn, the consumption is much less than usual at this particular time; hence, notwithstanding the small are the sales are only running single turn, the consumption is much less than usual at this particular time; hence, notwithstanding the small are the sales are only running single turn, the consumption of the sales ar

desirable than a slight reduction in prices, and those who have strictly maintained their reputation in this respect, seem to have the advantage. Bars can be bought at all prices however, from 1.6¢ @ 2¢, according to

Skelp Iron.—Prices are nominal at 2¢ @ 2.7¢, according to widths. No sales reported for some days past.

Meel Rails.—The market is a little unsettled, owing to rumors of cutting by some of the manufacturers. We cannot learn the content to the state of the same of the sa definitely that such is the fact, and as ther is no special necessity for any seller adopting such a course, the report may be considered at least doubtful. A sale of several thousand tons has been made by a Pennsylvania mill for Western delivery at a very low price, but the sellers state that the rate of freight was such as to net the regular rate at mill. In other words, the reduction was in the rate of freight, not in the price of Rails. Orders have been placed at \$42.75, delivered at tide, and for same delivery in the fall, \$43. We quote, \$41.50 @ \$42.50, at mills. Market unsettled.

Iron Rails.-The market is still reported dull and unsatisfactory, but as several contracts which were pending some time have been finally closed, the sales during the week are apparently of a larger amount than usual. The largest lot is one of 1000 tons, another of 600, and several small lots, making about 2500 tons in all. There are numerous inquiries for Light Rails, and it is likely further sales of this class will be made in course of a few days. Prices are deter-mined in a large measure by terms of settlement, but \$32 @ \$35 may be considered a fair indication of the state of the market.

Old Rails.-The market continues ex tremely dull and prices almost nominal. We cannot hear of any sales for city delivery, but one lot of upwards of 1000 tons is reported at \$20, delivered at an outside point. The demand seems to have dropped off entirely, and several lots have been offered at \$20 to arrive, without securing any bid. We quote the market dull and nominal at \$19.50 @ \$20.57, according to quality.

Scrap Iron.-The market is extremely dull at \$22@ \$23 for Wrought, and \$15 @ \$16 for Cast.

Nails .- The market is quiet, but prices are well maintained, and sales at former quotations. A meeting of the Eastern Asso-ciation is to be held on Thursday, when it is said an effort will be made to further advance prices. This project will not meet with unanimous support in the present de-pressed condition of general business, although prices are still unremunerative.

Lead is unchanged at former rates say, Lead is unchanged at former rates say, \$3.75 for Common to \$4 for Refined. Manufactured is steady. We quote: Bar,  $5\frac{1}{2}$ ¢; Pipe, 6¢; Sheet,  $6\frac{1}{2}$ ¢. Shot is active and firm, as follows: Chilled, 9¢ @ 10¢; Prop,  $7\frac{1}{2}$ ¢ @  $8\frac{1}{2}$ ¢; Buck,  $8\frac{1}{2}$ ¢ @  $9\frac{1}{2}$ ¢, all less the regular trade discount of 10%.

#### PITTSBURGH.

Office of The Iron Age, 77 Fourth Avenue, 7 Pritsburgh, March 19, 1878.

General business has given some evidence of improvement during the past week, not-withstanding it is far from being what it should be at this season of the year; it is stated, however, by those who have been taking observations, that business here in stated, however, by those who have been last day of this month, and a special meeting taking observations, that business here in has been called for to-morrow week to take Pittsburgh is considerably better than it is such action in regard to the matter as may west of here. The great cause of complaints the degreed heat. west of here. The great cause of complaint on the part of our manufacturers is not so much a dearth of business as the very small for cash; 200 kegs and upward, \$2.40, 60 margin for profit, which is attributable to days. an active competition, the result of overproduction. While our capacity for turning out Iron, both raw and finished, nails, window glass, coal, coke and petroleum, is but little, if any, more than one-half employed, the supply of all these articles is in excess of present wants, and but for the fact that the production is being gauged according to the consumption, these important Pittsburgh interests would be in much worse condition than they are. At the present time the Iron and nail mills not only here but throughout the West are only running half time, and the same is true of coal, and it is probable that the production will be kept down until there is good evidence of an increased conconsumption is looked for.

While the numerous failures and suspensions recently have restricted business weakening confidence, there is reason to be lieve that in the end they will be productive of some good, as they will have purged the country of that class who have been en in overtrading and working upon other peoples' money, and who are largely responsible for the hard times through which we have been passing during the past few years. Business could be largely increased throughout the country if people were willing to sell on time as for merly, but there has been so much lost re cently that people have very sensibly arrived at the conclusion that it is better to do half the business on a cash basis or its equivalent. Some of our merchants and manufacturers have adopted a rule, and it is a very good one, not to allow a customer to commence a second bill until he has paid the first one This is a good move, and it is just as good for the buyer as the seller, provided it is his intention to do the square thing. It is very evident that we have got to get back to first principles, and that the class to which reference has been made, who want to do business without either capital or integrity, and whose sole object is to "get away" with those with whom they are brought in contact, will be placed on the retired list, and the sooner the better.

of Western Irons that the supply of lowof Western Irons that the supply of low-priced Eastern Pig would have been ex-hausted long before this, but like the widow's meal bag, there appears to be no end to it, and while the latter is from \$2 to \$3 P ton cheaper than the former, consumers, as a matter of course, will use just as little Western as they can possibly help. The mills, as a matter of necessity, are buy-ing an occasional small lot of Western Red Short for mixture to bring up the quality of their low-priced Eastern, but the quantity of the former wanted is very small as compared with the latter, and the producing interest is in worse shape now than it has been at any time since the panic, and there appears to be no alternative for the Western producers but a general suspension, as they cannot begin to obtain the cost of produc tion; and this being the case, the more business they do the less money they have. Prices may be quoted as follows:

BITUMINOUS COAL SMELTED. EASTERN COKE. 17.50 @ 18.00 Manufactured Iron .- Business in nearly

very kind of Manufactured Iron continues ull. It is not what it usually is and should dull. be at this particular time, while the mills not only here, but elsewhere, are only working single turn. But few, if any, of them, so far as your correspondent can learn, are pressed with orders. However, there will no doubt be an increased demand within the next few weeks, as with good roads business will revive at points in the interior, and until it does it will continue dull at the large points of distribution.

There will certainly be an increased con-South, in view of the large emigration to those sections, and as stocks are light we are in hopes that the market will pan out better than is now generally expected. Prices may be quoted upon a basis of 1.70¢ @ 1.80¢, oo days, 2 % off for cash—that is, for ood stock.

Nails.—Have commenced to move pretty freely, and, while business is not as brisk as it should be at this particular time, it is about all that can reasonably be expected. Stocks, both in first and second hands, are comparatively light, owing to the very light production since December last. Combina-tions, as a general thing, are to be con-demned in view of the fact that they fre-quently lead to moncpoly, but had it not been for concert of action among the Nail manufacturers, the business at the present would no doubt have been in a worse condiwould no doubt have been in a worse condi-tion than ever before, as there would have been a heavy over-supply, and, with a ruinous competition, prices would have been forced down below actual cost of production, as was the case last fall. The regular monthly meeting of the Western Nail Asso-ciation took place last Wednesday, but thing of any importance to the conversincthing of any importance to the general public was done. The agreement in regard to the limitation of production expires on the be deemed best. No change in prices. Less than 200 kegs, \$2.50, 60 days, 2 % off

Steel .- The general position of the mar ket remains much the same as noted in our last report; business continues quite active. The mills, so far as your correspondent can learn, have about all they can do. Some of them report that they are unable to catch up with their orders, and the outlook warrants the prediction that this will continue to be the case all this year. Steel manufac-turers are doing much better than Iron manufacturers, as in addition to having all the business they can do, they have a better margin for profit, notwithstanning it has been cut considerably within the past few years. We continue to quote Tool Steel at 11¢ @ 13¢, according to brand and quality 11¢ @ 13¢, according to brand and quanty;
Machinery do., 5¢ @ 7¢; Spring do., 6¢ @
7¢; Plow, do., 5¢ @ 8¢; Tire, 4½¢ @ 5½¢;
Boiler Plate, 7¢ @ 8¢.

Wrought Iron Pipe.—Business continues

dull, as it always is at this particular time, but a good trade during the summer and fall is confidently looked for and will no doubt become be realized. No change in discounts, 55 @ 60 % off regular list.

Serap.—The market for all kinds of Scrap continues dull, although all that can be reasonably expected under existing circumstances, particularly in view of the very low price of Pig Iron. In the absence of sales old Iron Rails quotable at \$20 @ \$21, cash; Old Car Wheels, \$19 @ 20; No. I Railroad Wayneth Serse, \$27 @ \$22, Roiles de \$22. Wrought Scrap, \$21 @ \$22; Boiler do., \$24 @ \$25; Blacksmith do., \$20 @ \$21; Cast Turnings, \$11 @ \$11.50; Wrought Turnings, \$16 @ \$17; Car Springs, \$38 @ \$39; Car Axles, \$28 @ \$29.

Window Glass-There is a fair business for the season, but prices have been reduced such an extent that the margin for profit is small. Discounts for car-load lots 10 and 10, and small lots 70. Stock in hands of Pittsburgh manufacturers placed at 240,000 boxes, which, we believe, is small r this season of the year.

Coal .- The water in the river continue in good navigable condition for running Coal, and shipments to the down-river markets are being uade almost every day. The mines in the Monongahela and Youghiogheny valleys are only being worked half time, and but for this the shipments during the past few weeks would have been much larger

Petroleum.-The refining business here in Pittsburgh, continues very dull, but it is hoped and expected that there will soon be a change for the better and that our r will all be started up before long. T lowing interesting statistics are taken from Stowell's Reporter, just out. The daily average last month, according to the author-

#### CHATTANOOGA.

Office of The Iron Age, Market and 8th Sts., (CHATTANOOGA, March 19, 1878.

continues rather dull. The movement in Pig Iron has been considerable. The volume of transactions in all sorts of Manufactured Iron and Nails has not shrunk. The falling off in prices of Forge Irons has induced consumers and others to buy more liberally than usual. Foundry grades continue rather scarce, in good request, and prices fully maintained.

There is a general impression among the best-informed iron men of this district, that Pig Iron must advance considerably in price in this market pretty soon. There is consequently general indifference to offers at al quently general indifference to offers at all below quotations by those who can hold their stocks easily. The bulk of the pig in the district is held by furnaces and investors, who are quite able to keep what they have without any embarrassment, and the falling off in Forge Irons has naturally produced perceptible speculative investments in those grades. The weather continues delightful. Roads are dry and hard. Fruit trees are all in bloom and nature is putting on her spring clothing. A continuance of this sort of weather another week will bring about a full opening of spring trade in all about a full opening of spring trade in all lines of business.

Pig Iron,-There is no change to note. Fig 1704.—There is no change to note. Forge Irons are brisk sale, but show no tendency, as yet, to recover from their late decline. Sales of Forge for the week aggregate something over 1100 tons. The supply of Foundry is still below the wants of the marof Foundry is still below the wants of the market. We quote: Coke Irons, No. 1 Foundry, extra, \$20 @ \$21; do., \$18@ \$19; No. 2, \$16 @ \$17; Gray Forge, \$13 @ \$14; White and Mottled, \$11 @ \$12. Hot Blast Charcoal—No. 1 Foundry, extra, \$20 @ \$21; do., \$19 @ \$20; No. 2 Foundry, \$17 @ \$18; Gray Forge, \$16 @ \$17; White and Mottled, \$15. Cold Blast Charcoal—Car Wheel Metal, \$22.50 @ \$27.50; do., Extra Standard, \$24.50 @ \$29.50; Forge, \$17.50 @ \$20.

Miscellaneous,-Muck Bar we quote at \$27 @ \$31. Old Rails continue very scarce and hard to get. We quote them at \$17 @ \$18 \$7 ton. Old Car Wheels are worth \$18.50.

Ores.—Brown Hematite, 50 to 56 %, ; \$\vec{P}\$ ton, \$1.75 @ \$2.25. Red Fossiliferous, 50 to 56 %; \$\vec{P}\$ ton, \$1.70 @ \$1.90. The above prices for Ores delivered in Chattanooga on cars or on the wharf from flat boats.

Nails—Fully maintain the former prices and demand. We quote at \$2.50, with usual discounts on job lots.

Manufactured Iron.-The demand for Manufactured Iron.—The demand for Merchant Bars is good, rather better than last week. Mills are on full time, and no stocks ahead. The demand for Spikes and Bolts is still brisk and quite up to the capacity of manufacturers to meet. Merchant Bars are quotable at \$z, cash; Railroad Spikes, \$2.50; Light Rail, \$2.25; Track Bolts, \$3; Trestle Bolts, \$4.

Iron Rails,-The mill here has been pushing through some small orders, preparatory to changing their plant to one suitable for making Steel Rails. There is no improvement in prices and no orders, except to meet sudden contingencies. We quote Rails at sudden contingencies. \$34 @ \$36 ?? ton.

t'oke.-Trade as usual. The demand is prospectively better, and both supply and quality of the article will be improved this season. We quote at \$2.50 P ton, on cars in Chattanooga.

CLEVELAND, March 19, 1878. 

Pig Iron.-Until the outlook for Pig Iro better there is no prospect of active Ore trade. There is only a sligh demand now for the metal, and the marke is largely overstocked with all kinds and grades. The most satisfactory trade is in Charcoal Pig, which is moving with more o a show to activity than any other grade Prices, however, are still depressed on ac count of the large supplies.

Bar Iron and Nails,-There is a ver good demand for Bar Iron, and the jobber report a very active market. The manufacturers, however, complain of the low price and the strong competition.

Scrap Iron,-All kinds of Scrap continue exceptionally firm. This is particularly true of Old Rails, which had been expected to decline materially by this time. They remain, however, firm, though in large supply.

#### BOSTON.

March 16.—Pig centinues very dull, and prices tend downward. This is partly owing to lower freights this way and partly to depression at the mills. We quote: \$20.50 @ \$21 for No. 1; \$19 @ \$19.50 for No. 2, and \$18.50 @ \$19.25 for Gray Forge. Scotch Pig is dull, with a very light demand. Bar continues unchanged quoting \$12.0 \$42. for Refined changed, quoting \$43 @ \$45 for Refined and \$35 @ \$36 for Common. American Rails, \*32 @ \$37. Steel Rails, \$43 @ \$44, from mill. Nails are in light demand at unchanged prices. Sheet is selling at 3¢ @ 3¼¢ ₽ B. Russia is quiet at 10¼¢ @11¢. We quote English Spring Steel at 7¢ @ 8¢. 3%¢ % lb. Russia is quiet at 10%¢ @11¢. We quote English Spring Steel at 7¢ @ 8¢, gold; 9¢ @ 11¢ for German; 9¢ @ 11¢ for Machinery; 14¢ @ 15¢ for Cast; 10¢ @ 12¢ for Blister; 8¢ for American Spring; 13%¢ @ 14# for Cast; of for Blister; and 8f for Machinery. There have been sales of 7000 @ 8000 tons Steel Rails at \$43, at tidewater. made. It causes in uneasy teeling, the substitution of the demand. It was thought by holders ments out of the region, last month, 3,875,964

Machinery. There have been sales of 7000 sales of the demand. It was thought by holders ments out of the region, last month, 3,875,964

Machinery. There have been sales of 7000 same month, 1877, 38,816 barrels. Shippresent class of buyers is considered more of the demand. It was thought by holders ments out of the region, last month, 3,875,964

barrels; same month, 1877, 3.555,342 bar- 000 lb Lake at 171/4 @ 171/4. For manufacbarrels; same month, 1877, 3.555,342 barrels; same month, 1877, 3,410,400 barrels. Number of producing wells, 8725; February, 1877, 8516; number new wells completed, 226; March, 1877, 274; number new wells drilling, 326; March, 1877, 334. The above statistics generally make an unfavorable showing for the producing interest, but an improvement is expected just as soon as the export trade commences to open up.

CHATTANOGGA turers we quote: New Sheathing, 28¢; Bolts and Braziers, 39¢; Yellow Metal Bolts, 25¢ @ 25½¢; ditto Sheathing, 20¢. Lead is a trifle steadier. We quote: Pig, 3½¢ @ 4¢, ight for 10-ton lots. Tin is dull, with a very light demand. We quote: Straits, 144% (6) 15%; Banca,  $17\frac{1}{2}\%$  (6)  $17\frac{1}{2}\%$ ; Befined English, 15% (6)  $15\frac{1}{2}\%$ , gold. We quote Plates: Charcoal, I. C., \$6.25 (6) \$6.50; Coke, \$5.50 (6) \$5.75; and Terne, \$5.90 (6) \$6.20, gold.—Commercial Bulletin.

#### LOUISVILLE.

Messrs. GEO. H. HULL & Co., under date of March 18, write us as follows: There is an improved demand for all grades, but prices remain extremely low, with no prospect of an early advance. The usual time, 4 mos., is allowed on quotations below:

	FOUNDRY IRONS,			
l	No. 1 Hanging Rock, Charcoal	19.00	200	22.50
i	No r Southern Charcoal	10.00 6	an.	20.00
ı	No. 2 16 40	49.00	ä	20.00
1	No. r Hanging Rock, Stonecoal and			
١	Coke	20,00 (	0	21,00
,	No. 2 Hanging Rock, Stonecoal and			
	Coke	18.00 (	3	10,00
1	No. 1 Southern, Stonecoal and Coke	18.50	20	10.50
ė.	No. 2 "	17.50 6		
	"American Scotch"	20,00		
	Silver Gray			
		47,00	Feb	10,00
	MILL IRONS.			
	No. 1 Charcoal, Cold-short and Neut'l. No. 1 Stonecoal and Coke, Cold-short	17.00 (	0	18.00
	and Neutral No. 2 Stonecoal and Coke, Cold-short	16.50 (	0	17.50
	and Neutral	16.00 6	65	17.00
١,	No. r Missouri and Indiana Red-short.	20,00	2	22.00
1	White and Mottled, Cold-short and		OP	
1	Neutral	14.00 (	0	16.00
J	CAR WHEEL AND MALLEABLE IR	ONS.		
	Hanging Rock, Cold-blast	24 00 6	20	20.00
	Alabama and Georgia, Cold-blast	34.00	200	37.00
	Rentweles Cold blook	34.00 (	15	33.00
1	Kentucky, Cold-blast	25.00 (	se.	33.00

#### ST. LOUIS.

Specially reported by Messrs. Spooner & COLLINS, Iron Commission Merchants, 217 North Third street, St. Louis, under date of March 14: Market is rather dull, but an improvement over last week. With good weather we hope for an increase of trade, but no present prospect for an advance in prices.

	No. 1.	No. 2.	Mill.	White and M't'ld	
M'souri Stone Coal					
Missouri Charcoal		\$18.50	\$18.00	\$17.50	
Tenn, Charcoal South. Coke, soft	22.50	20,50	18.50	Mot- tled.	White
and strong Hang. Rock Char-	23.00	21,00	19.00		\$18.00
Hang. Rock Char-		24.00	23.00		
coal, Cold-short,	23.00				
	Extra No. r I. M. Ore.	No. 1 I. M. Ore.	Extra A No. 1 Na- tive.	No. 1. Na- tive,	ice, in.
Hang, Rock Coke, equal to Scotch.	25.00	24.00	24.50	23.50	33.00
	Extra No. r.	No. 1.	B No. 1.	No. 2.	
West Va. Coke	23.50	23,00	22.00	21.50	

COLD-BLAST CHARCOAL-A	ll Numbers
Hanging Rock	mos. \$25.00 @ 28.00
Tennessee4	mos. 26.00 @ 20.00
Kentucky	mos. 26.00 (\$ 20.00
Missouri4	mos. 26,00 @ 20,00
Georgia4	mos. 26.00 78 30.00
Alabama4	mos. 26.00 @ 30.00
Assorted Bar Iron	2.00 @ 2.10
No. 1 Railroad.	eo.1 @ op. oo1
Heavy Cast Scrap	.65 @
Light " "	.55 @
Old Can Wheele	mos. 20.00 @ 20.50
Old Car Wheels4	mos. 16.00 @ 17.00
-	

#### CINCINNATI.

Messrs. L. R. Hull & Co., under date of Coal.—We quote run of mine to manu-March 16, write us as follows: Pio Isos.—facturers at \$2.50 \$2 ton, on cars in Chatta- The demand is better and a very fair amount nooga. The spring weather has about of business can be reported. Prices, how-stopped the demand for lump and fancy cover, are certainly no firmer, and while both buyers and sellers would be glad to see higher prices firmly established. There is nothing in the outlook at present that can be made the basis for such expectations for the early future.

	No. 2, "	20.50 @ 21.00
	NO. I COKO	2.,00 @ 22.00
n	NO. 2	19.00 @ 20.00
	No. 1, Stonecoal	10.00 @ 20.00
n	Virginia, No. 1 Coke	20.00 6 21.00
at	No. 2 "	19.00 @ 19.50
et	Ala, and Tenn., No. r Charcoal	20.50 @ 21.00
	Shawnee, No. 1 Stonecoal	19.00 ( 19.50
d	Shawnee, No. 1 Stonecoal	10.40 @ 20.00
n	" No. 2 "	18.50 ( 19.00
of		- w. Jo. @ 19.03
	FORGE IRONS.	
θ.	Hanging Rock No. 1 Charcoal	20.00 @
e-	Hanging Rock No 1 Coke	18.50 @ 10.00
	Virginia, No. 1	18.50 ( 10.00
	Ala. and Tenn. No. z Charcoal	18.50 6 10.00
У	Red-short, No. 1 Coke	10.50 ( 20.50
rs.	Cold-short, No. r Stonecoal	17.00 @
	Old Rails, primecash,	20.00 0
3-	CAR WHEEL AND MALLEABLE	
86		
-	Hanging Rock	33.50 @ 35.00
- 7	Southern and Western Brands	28.00 @ 30.00
38	ORE,	
le.	Virginia Hematite (Washed)oash	4.25 0
-		41.02 (0.114

#### BALTIMORE.

Mr. W. N. WYETH, Iron and Steel Merchant, 46 and 48 South Charles street, re-port us the following prices, under date of March 18, 1878: Business for the past week has ruled better, and values are firmer at annexed figures : AMERICAN REFINED BAR IRONS.

		1.93	0	3	ø
	Round and Square, ordinary sizes from 1/2 to 2 inclusive	1.05	O.		á
	Hoop iron, 11/4 wide and upward. "	2.47	25	-3/	ă
	Band Iron, from 1% to 4 in. wide "	3 1/4	8	374	Z
	Horse-shoe Iron 3/4 to 1 wide by 3/4	274	(4)	3	۳
	to 1/4 thick		_		
ı	Norway Nail Rode	3%	9	379	۶
		572	(3)	0	g
	Black Diamond Cast Steel, Flats,				
١	Squares and Octagon, ordinary				
	Sizes	X436	a	25	ø
	Machinery Steel	8	0	9	è
	Cast Spring Steel "	286	6	4	è
٠	Homogeneous Steel Plate "	882	a	0	ě
i	Perkins' Horse shoes, W keg of 100 lbs.		4	1.02	ŭ
	" Mule shoes			1.02	61
	R. R. Spikes	-3/4			
	Common Horse Nails	20.7	3	-0	7
		249	100	10	y
١,	Dutage Harry Nation 10 9	0	7	0	4
	Putnam Horse Nalls B 18 19	20	21	23	
	Globe Horse Nails B b 18 19	20	21	33	р
	Loss list discount to the trade				

Messrs. R. C. Hoffman & Co., Iron and a position to enter into such transactions, ommission Merchants, No. 23 South Fredbecause we had not acted on the system of

Baltimore	Charcoal	Pig				 			\$39.00 @ 30.00
Virginia	**	66				 			28.00 @ 30.00
Anthracit	e No. 1		0 0			 			19.00 ( 20.00
- 11									18.00 @ 19.00
11	No. 3					 			17.00 @ 18.00
81	Mottled a	and	W	h	ite	 			14.00 @ 15.00
Oharcoal,	C. B. Bloc	ms							50.00 @ 55.00
**	" Bille	ets.		* *		 	* *	8 8	55.00 @ 60.00
Refined I	Blooms	***		* *		 		**	45.00 @ 50.00

#### CHICAGO.

L. R. HULL & Co., 95 Washington street, under date of March 18, report as follows: There is a little better feeling manifested this week. There is more inquiry, but not sufficient to readily take offerings or increase prices. Quotations unchanged.

LAKE SUPERIOR CHARCOA

DAKE SUFERIOR CHARGOAL	
Lake Superior No. 1	22.00 @ 23.00
AMERICAN SCOTCH.	
Mahoning Valley. No. t	22.50 @
Shawnee, No. 1 No. 2	21.00 @
Jackson County, Ohio, No. 1	22.00 @
Silvery Gray	

# Our English Letter.

Review of the British Iron, Steel, Metal and Hardware Trades.

(From our Regular Correspondent.)

The only general impression is that we need not look for any improvement before autumn, even supposing the Eastern embroglio to

ernment has given a slight spurt to several branches of business in various parts of the country, including Sheffield and other iron centers. Not only are there orders out for rifles, ammunition and ordnance, but for 20 miles of railway requisites, 30,000 sleepers, torpedo and other boats, steel for bayonets and arsenal tools, shovels and spades, as well as picks for the engineers and pioneers, ironwork for field ambulance wagons, and all kinds of saddlery, stable fittings, mess tins and other articles germane to barracks and tents. Despite this influx of gov-ernment contracts, however, there is no briskness in any single trade, except that devoted to steel rail rolling, throughout the whole country, a fact that is of itself suggest-ive of the inquiry as to what would have ive of the inquiry as to what would have been the state of things without these commissions.

THE CHAMBERS OF COMMERCE

of the country held their associated meeting at the Westminster Palace Hotel, London, last week, under the chairmanship of Mr. S. S. Lloyd, M. P. The Derby Chamber sent a proposition, which was adopted, declaring the advisability of the association taking measures to enforce upon the government the inadvisability of signing treaties which excluded Great Britain from treaties which excluded Great Britain from the "most favored nation" treatment. The motion of the Sunderland Chamber, "that the practice of insisting upon the imposition of protective duties on the importation of British manufactures is a subject requiring the attention of the government,' adopted, as also was that of the Shef field Chamber calling the attention of the colonial secretary to the heavy duties imposed by France upon British colonial manufactures. Resolutions were further passed advocating a modification of the Spanish tariff, complaining of insufficient considera-tion in legislation for commercial interests, and asking for a responsible representation of those interests. On the second day of the meeting a deputation waited upon LORD DERBY

at the Foreign Office, and presented memorials in the sense of the above resolutions also affirming that the action of foreign and colonial governments in enforcing protective and prohibitory duties on British manufac-tures should be "taken up" by the govern-

IN REPLY

Lord Derby, who is noted for his excessive caution, said that though the government might have had more urgent and graver welfare of the country than the subject under discussion. He heard with satisfaction that they were ready to admit that no effort had been wanting on the part of that effort had been wanting on the part of that could assure them it would always be so. States, 31,071 to Australia and 9280 to British North America: As to not making treaties which did not give England the most favored nation treatment, he believed there would be no difference between them on that point. With regard to the insufficiency of that arrangement in itself to secure the desired advantages, he thought a very good case had been made out; but it was one of those cases where it was much easier to point out 

ters of bargain and negotiations in regard to the terms on which goods should be admitted to foreign countries, that constituted the weakness of our position. He fully under-stood the inconvenience which arose from suspense in trading operations, and from those short renewals of existing treaties which left all parties in uncertainty as to the future state of things. AS TO ITALY,

they had made various endeavors, and would still continue them, to obtain more definite arrangements than now existed. Negoti-ations were proceeding and the deputation would be supplied with the result.

NEGOTIATIONS OR OTHERWISE ?

Continuing his speech, Lord Derby said he had been told that they ought not to negotiate any treaties unless their effect was to operate in the direction of free trade rather than protoction. He did not exist and as than protection. He did not quite under-stand whether it was meant that in the event of our not succeeding in negotiating a treaty in that direction, it was to remain in abeyance. It was their duty to try to ob-tain all they could in that direction, but he did not think it was their duty to place England in a disadvantageous position with other countries, merely because we were not able to conclude arrangements which would be more satisfactory than those which existed at our point of departure. He was bound to say that he was entirely of the same opinion as the deputation in regard to Spain's attitude. Our tariff was specially favorable to Spain, but she persisted in re-SHEFFIELD, Eng., March 4, 1878.

THE WEEE'S TRANSACTIONS
in all branches of the iron and steel industries have not been on a satisfactory scale, owing to the constant variations of all kinds of alarming political rumors. As a natural outcome of this state of things prices are weak all round, and nobody appears to have the slighest idea as to what the course of trade may be during the next few months.

The only general impression is that we need that they shad of a right to take what line of conduct she thought proper; so that apart from the matter of reprisals—and he did not suppose anyone in the room or out of it would purpose that they should go to Parliament and ask them to adopt a differential rate of terms for goods coming from different countries—he did not see in that respect what they had within their power beyond what they had within their power beyond calling the attention of the Spanish govern ment to the matter, which they had done again and again, pointing out what they conagain and again, pointing out what they considered the unfairness of the view they across there can be little or no doubt that the present depression would be still further deepened—particularly if this country should be actively involved. The thing is bad enough as it stands, but it would be infinitely worse were England to become mixed up in the fighting.

AT THE BAME TIME

there can be no doubt of the fact that the "spending of the six millions" by the government has given a slight spurt to several by reaches of hysious parts of the suppose of hysious parts of the suppose of the six millions in the first parties or not in what they considered the unfairness of the view they sadopted, and trusting to their sense of justice to remedy the matter. In the meantime they must recollect that if they were free traders, which they all held themselves to be, they must be aware that the disadvantage which Spain inflicted by those exceptional means upon English trade was not limited to one side. She was doing us, and that was the view which England expressed in the matter. As to the remark that we did not want other countries to precede us in making tariffs, he must remind them that whether we were the first parties or not in whether we were the first parties or not in concluding a tariff did not altogether depend on our action, but also on the action of the other governments with whom we had to deal.

SIR LOUIS MALLET,

the eminent authority on Indian matters, is persons who advocate the reciprocal system in preference to free trade. The work will be looked forward to with considerable interest.

THE TAY BRIDGE,

one of the greatest triumphs of modern en-gineering skill, as well as one of the largest conglomerations of iron in the world, has at length been finally and satisfactorily tested by Gen. Hutchinson. Six heavy locomotives and tenders, weighing 432 tons altogether, were slowly driven over the bridge, which in no part showed a greater deflection than 134 business being done up to 51/1 cash, closing inches. This weight was fully three times business being done up to 51/1 cash, closing buyers thereat, sellers at 51/1 cash closing buyers thereat, sellers at 51/1 cash that 50/11 was account to the self-state of the market has been firmer, a moderate business being done up to 51/1 cash closing the market has been firmer, a moderate business being done up to 51/1 cash, closing the market has been firmer, a moderate business being done up to 51/1 cash, closing the market has been firmer, a moderate business being done up to 51/1 cash, closing the market has been firmer, a moderate business being done up to 51/1 cash, closing the market has been firmer, a moderate business being done up to 51/1 cash, closing the market has been firmer, a moderate business being done up to 51/1 cash, closing the market has been firmer, a moderate business being done up to 51/1 cash, closing the market has been firmer, a moderate business being done up to 51/1 cash closing the market has been firmer, a moderate business being done up to 51/1 cash closing the market has been firmer, a moderate business being done up to 51/1 cash closing the market has been firmer, a moderate business being done up to 51/1 cash closing the market has been firmer, a moderate business being done up to 51/1 cash closing the market has been firmer, a moderate business being done up to 51/1 cash closing the market has been firmer, a moderate business being done up to 51/1 cash closing the market has been firmer, a moderate business being done up to 51/1 cash closing the market has been firmer, a moderate business being done up to 51/1 cash closing the market for passenger trains.

AUSTRALIAN SHALE,

Volatile matterper cent., 70
Clarke (Carbon
Coke {Carbon
Total #
Total
Purified gas per ton of shalecubic feet, 15.39
Illuminat'g power, standard test sp'm c'dles, 46.3
Hydrocarb's condensable by bromine per ct., 24.0
Sulphuretted hydrogen in foul gas " o.
Carbonic acid in foul gas
Ash in cool
4 - 4 - 4 4 4 4 4 4
Duiphur in Cont
Tar per ton of shalegallons, 40
Liquor per ton (4 oz. strength) " 2
Liquor per ton (4 oz. strength)
Specific gravity 10.60
The illuminating power ranged from 38.46 to
48.32 sperm candles.

The analyst adds that "this is a remarkably rich cannel coal, and it yields a large amount of illuminating power." Our Australian friends are, I certainly think, to be congratulated on the issue of these tests.

THE EMIGRATION RETURNS

for last year are of much interest to all employers of labor, and for that reason I append some of the leading figures, with the intimation that the total fell from 138,222 in estions to deal with, there were none of 1876 to 119,071 last year. The immigration seper or more permanent importance to the in 1876 was 93,557 persons, but last year the

sh North America:			
Port of Departure. Liverpool	Cabin, 20,669 7,640 324 5,070 2,166	Steerage. 34:313 19,528 15,331 9,678 7,841	Total. 54,975 90,168 15,885 7,757 10,007
Cork	404 340 341	7,128 8,033 978	7,539 9,373 1,304
Total		82,824	119,971
THE WAGES	QUEST	HON	

the country, and it "goes without saying" difficulty of securing orders. The smelters 1/ 2 ton, and at several collieries reductions that the employers are carrying all before them. The employers of the Northern Board of Arbitration and Conciliation met last week at Darlington, and passed the following resolution, and passed the following resolution, and passed the following resolution, affecting the former county being now at work. At closed. Last week's coal exports from the Sheepbridge two furnaces are undergoing whole of Wales amount to 120,000 tons. Board of Arbitration and Conciliation met the former county last week at Darlington, and passed the following resolution: "That in the opinion of this meeting the present state of trade justiments are considerably neglected, and foundation of I/per ton on puddling brands are considerably neglected, and foundation of I/per ton on puddling brands are considerably neglected, and foundation of I/per ton on puddling brands are considerably neglected, and foundation in the former county in the former county in the former county former this meeting the present state of trade justifies a reduction of I/per ton on puddling and Ioper cent. in wages paid to all other classes of workmen connected with the forges and mills, and a further reduction of classes of workmen connected with the forges and mills, and a further reduction of 7½ per cent. in the wages of shinglers, beaters, rollers and shearers in connection with plate mills; and also upon certain other classes of labor in plate and other mills, of which due notice will be given. That Mr. Winpenny be instructed to inform the operatives' secretary that, upon the termination of the present wages agreement, the payment of prize-money, level-hand money and underhand money will be discontinued by the employers connected with the Board of Arbitration." the payment of prize-money, level-hand money and underhand money will be discontinued by the employers connected with the Board of Arbitration." nected with the Board of Arbertason.

The present wages, 8/3 per ton, for puddling has been in force two years, puddling has been in force two years, capital rail contracts have recently been sharens in Staffordshire and other districts capital rail contracts have recently been at both these great establishment. whereas in Staffordshire and other districts capital rail contracts have recently been the rate varies from 8/ to 8/3. If the full placed. At both these great establishments reduction now claimed should be awarded, the armor plate departments are only reduction now claimed should be awarded, the armor plate departments are only the rate of payment would be lower even than during the depressed period of and the doubt that by the construction of further about 1867.

THE SHEFFIELD ENGINEERS

have also at last been put to the crucial test, and a movement has been inaugurated among the employers for lowering wages from 36/ and 34/ to 33/ and 31/ weekly, besides an extension of the working hours. The men are resisting, but they will almost inevitably have to "come down" to the employers' terms. The initiative taken here will spread over the whole of the country.

IN OTHER RESPECTS

imilar steps are being taken, notices of reductions having been given to the Stafford-shire and Worcestershire nailers (20 to 30 per cent), the South Yorkshire and Derbyshire miners (5 per cent.), the Leicestershire miners (20 per cent.), the Welsh miners (5 per cent., which has been accepted), the Forest of Dean puddlers (7½ per cent.), and the hammermen of the same district (1/ per ton). The Osiers Iron Works, Wolverhampton, are to be closed and the workmen dismissed, thus adding to the great distress previously existing in the town. Speaking of

FOREIGN COMPETITION,

the chairman of the Loudon and North-western Railway the other day said he thought there was something grievously wrong, when in our own markets we were undersold by foreigners in glass, manufac-tured iron, slute paper, screws and other tured iron, slate, paper, screws and other articles. He believed that this result was largely owing to the regulations of government and to the restrictions of trade unions.

THE WEEK'S FAILURES

have included those of Willis, Percival & Co., bankers, Lombard street, London, owing £650,000; of E. De Gray Bowyer Smith, colliery owner, near Barnsley, owing £40,-000; of Alexander & Hill, coal merchants, &c., Barnsley, with £16,000 liabilities, and of Edward Keeler, cutlery manufacturer, Sheffield, £1300.

SCOTCH PIG IRON

has been tolerably quiet all the week, with a the eminent authority on Indian matters, is stated to have in preparation an essay on reciprocity, in which he will endeavor to controvert the theories of the new school of persons who advocate the reciprocal system in preference to free trade. The work will be looked forward to with considerable inlast year, and the imports from Middlesboro' have fallen off to the extent of 4786 tons.

Writing from Glasgow on March 2d Jas. Watson & Co., said: "In the absence of business and the uncertain political rumors, the price of Scotch Warrants gradually declined from 51/3 cash until 50/11 was accepted on Wednesday afternoon; since then the market has been firmer, a moderate

					. R.	N
G. M. B., at (	Hasge	DW		 52	0	- 5
Gartsherrie,	86			 50	6	5
Coltness,	4.6			 64	0	
Summerlee,	6.4			 58	.'6	
Langloan,	6.6			6x		9
Carnbroe.	6.6			 53	6	9
Calder, at Po	ort Du	indas		 58	/	5
Glengarnock	at A	rdros	880	 58	13	5
Eglinton,	46			 53	1	5
Dalmellingto	m. 44			53		5
Shotts, at Le	ith			 60	o	5
Kinneil, at B	o'ness			 84	6	- 5

worth of cast-iron pipes for Rio de Janeiro, Rombay and Santander, besides £4200 machinery and £1500 wrought iron. Sewing machines of the value of £4800 were sent off to Rouen, Havre and Antwerp. At many of the Scotch works wages are being lowered and working hours extended. To the great coal and iron firm of Wm. Baird & Co. there have recently joined as part-ners Alexander Fleming, William Laird, John Alexander, A. K. M'Cosh, Robert An-gus and James Baird Thorneyeroft. Mr. Alexander Whitelaw, M. P., is now the chief partner.

ras an important meeting the other day of the Ironmasters' Association for the purpose of taking into consideration the question of blowing out a further number of end it was determined to thus deal with 12, of which three were arranged to be at Thos. Vaughan & Co.'s, one at Gilkes, Wilson, Peace & Co.'s; two at Hopkins, Gilkes & Co.'s; one at Lloyd & Co.'s; one at B. Samuelson & Co.'s, and two at Bell Brothers. while one furnace each to be changed from Cleveland to some other iron at the Rosedale Company's and Lloyd & Company's. It was considered absolutely necessary to adopt this course at once.

TRADES OF SHEFFIELD.

In one or two quarters there is just now

dry numbers are only in moderate request. The vendors of hematite pigs are scarcely at the former establishment a government order for 600 sets of ambulance wagon fitonclads, a spurt will presently be them. There is now a good demand for Bessemer ship plates, which are very materially re-placing those of iron in the leading ship-build ing yards of the Mersey, Humber, Clyde,

ees and Tyne.
In the file trade the threatened strike of the hardeners has for the present been averted by the employers having decided not to enforce the drop of 10 per cent. The grinders, cutters, forgers and strikers have accepted

the reduction. Messrs. Lucas & Son, of the Dromfield Foundry, near Sheffield, have received a large order for shovels from the War Department, and are now fully engaged in its execution. At Sheffield one of the large execution. At Sheffield one of the large firms has received a good government order for hayonet steel, and has already sent off a consignment of about 30 tons. The iron-stone miners employed by the Butterley Iron Company, Derbyshire, have received notice of a reduction of wages, as also have the men employed at the Cottam Colliery and Renishaw Iron Works of Messrs. Appleby & Company. At the Clay Cross. Tibshelf. Company. At the Clay Cross, Tibshelf, Pilsley, North Wingfield, and Lings col-lieries, Derbyshire, the miners are all under per cent. There are 5000 to 6000 colliers thus effected. On Monday next the Associthus effected. On Monday next the Associated Coal Owners of Yorkshire and Derbyshire will meet at Sheffield for the purpose of arranging a general reduction of miners' wages throughout the two countries—probably of 10 per cent., from April 1st. The Parkgate seam of the Stafford Colliery is to be closed for a time, and the 120 men there. be closed for a time, and the 120 men employed are under notice. At the Holm-wood Colliery, Derbyshire, the miners have struck against a reduction of 2d. per ton on the prices paid for coal getting. Cocker Brothers (Limited) steel, wire, &c., manufac-turers, have declared a dividend of 71/2 per cent. for the year.

BIRMINGHAM AND SOUTH STAFFORDSHIRE

remain very quiet in most respects, and there seems no prospect of any early im-provement. In some departments, it is true, government contracts have been found of great value, but as a whole the export trade is greatly depressed. There is a moderately The is greatly depressed. There is a moderately good inquiry for plates, T's and grades, and for best sheets and boiler plates, as well as one specification for hoops, on government account. Best dockyard iron is also selling with tolerable freedom. Bars are not in any request, best being still quoted at £8 @ £8. 10/, and common at all sorts of prices between £6 and £7. The hardware branches a deare fairly well engaged. The government ask for tenders for 12,800 tin-lined cases, and for several varieties of saddlery, Walsall the market has been firmer, a moderate being favored in this latter respect. The business being done up to 51/1 cash, closing buyers thereat, sellers at 51/1½ per ton. Shipments last week were 5124 tons, against mostly provided from the reserve fund. The 6559 tons in the corresponding week of munition Company states that the amount of business transacted is still inadequate to their producing powers, although in excess of the previous year. Plant has been put down for the Snider rifle, for the Henry rifle, and for the Martini-Henry rifle. A profit of £3577 has resulted during the year. The annual report of

JOHN BAGNALL & SONS

(Limited) is in the following desponding terms: "The year's working has resulted in terms: The prices current of John E. Swan & loss of £13,245. 14/6, after writing off the Bros., and of William Colvin & Co., are in accord with the above. Last week's shipments from the Clyde comprised £14,700 tion of freehold minerals, £4,502. 5/2 for tion of freehold minerals, £4,502. 5/2 for debenture interest, and £1,480. 18/4 for legal charges in connection with the renewal of debentures and other matters. Various causes have contributed to this unfavorable At result—the depression in trade has been greater than ever, prices have continued to fall, and stocks to depreciate in value. The output of the works has not been much more than one-third of its normal capacity, owing no doubt to the state of paralysis occasioned in this country by the complications in the East, and by the almost total absence of foreign and colonial demand. The collieries continue to saffer from the short hours of labor, and from the extra cost occasioned by the Mines Regulation Act. Rates also press with peculiar severity upon mining enter-prise, especially those levied under the South Staffordshire Mines Drainage Act. financial position of the company has caused furnaces in order to reduce the production of pig iron. There was an impression that to furnaces would be set down, but in the glad to be able to state that they have are ranged for the temporary renewal of the de bentures which fell due on the 1st of January, 1878. Provision must, however, be made for paying them off."

WALES AND MONMOUTHSHIRE

Last week Dowlais sent some pig iron to Antwerp and 500 tons of rails to Gothen-burg. Rhymney sent too tons of rails to Matanzas. From Newport 2500 tons of rails and 500 tons of rails to Gothenwent to Bombay, and vessels are now load-ing at that port for the Cape and for Santander. More than 8000 tons of iron ore came into Newport last week, mostly from

whole of Wales amount to 120,000 tons.

THE METAL MARKETS

have been unsettled and prices have hardly been maintained. Von Dadelszen & North says: "Copper.—Considerable sales of Chili bars have been made, but at easier prices; G. O. B. have sold from £65. 10/ (\$\text{(a L65}\$) named to best brands, £65. 10/ (\$\text{(a L66}\$) £66. 15/ The state of the s (a £73; strong sheets, £76. At the Swansea ticketing, 2589 tons of ore sold at an average of 12/12 unit for 7½ \$\infty\$ produce. The particulars of the Chili charters for the first half of February are 750 tons bars and ingots and 350 tons of fine ores and regulus for England and 1000 tons bars for the Confor England, and 1100 tons bars for the Con tinent. Tin.—A steady market, with moderate sales in Straits at £63. 12/5 @ £63. 15/ erate sales in Straits at £63. 12.5 @ £63. 15./ and Australian at £63. 15. In Holland, Banca quoted 40½ fl.; Billiton, 38½ fl. The delivery last month of Banca was 358 tons; Billiton, 186; from London, 1069 tons; stock here, 8638 tons; Straits and Austra-lian afloat estimated at 3000 tons, Tin Plates continue to be sold at very low prices. In Liverpool, cokes offer at 16/ F Lead dull and lower. English pig, (\$\textit{L}\$1. 10/. Sellers of soft Spanish without silver, £18. Speller, £18. 15/(@ £19 for ordinary brands. Quicksilver, £7. 2/6. Anti-

mony, £50 @ £51."

Vivian, Bond & Watson report: "Copper.

—There has been scarcely any change in prices since our last, and the market has been very dull. At the close, however, there has been more activity, and a consid erable quantity of bars have changed hands at £65. Io/ for g. o. b.'s, £66 for better brands, and £66. I5/@ £67 for best brands. The market closes steady at £65. 10/@ £65. 15/ for g. o. b.'s. At the Wallaroo sale, on the 19th ult., the whole of the copper which was offered was sold, viz., 590 tons of cakes at £75. 7/6 @ £76; average, £75. 16/1; 144 tons of ingots at £76 @ £76. 7/6; average, £76. 5/10; making the average of the whole sale £75. 18/. In furnace material, a cargo of Bolivian ore and regulus, to arrive at Swansea, was sold by private treaty at 12/9 Swansea, was sold by private treaty at 12/9 (@ 13/ ?? unit respectively; and 585 tons of Cape ore, sold by tender in London, realized an average of about 13/ ?? unit. At the Swansea sale, on the 26th ult., 2539 tons of ore, average produce 73/ %, brought an average of 12/ ?? unit. The Chili charters for the first half of February were advised by cable on the 22d ult. as 750 tons of bars and invests and are tons of ores and results for cable on the 22d ult. as 750 tons of bars and ingots, and 350 tons of ores and regulus for England, and 1100 tons of bars for France; total, 2200 tons. Tin has been steady, but little doing; at the close prices are slightly firmer, and we quote Straits and Australian £63. 15/; English, £67 @ £68. There is a little inquiry for Peruvian, but very little offering; price nominally £58."

The Mining Journal remarks: "Copper.—Sales of Chili bars have been made this week at reduced prices, and it is reported

week at reduced prices, and it is reported that £65 cash has been accepted. The fall in price as yet is but slight, and it has been very slowly coming, for it has long been evident that the price of Chili bars was absurdly high, and it was merely a question of time as to when they would give way. Tin Plates.—The market is dull, and prices Tin Plates.—The market is dull, and prices have slightly given way again. Tin.—During the past week steady prices have ruled, but the quantity reported to have changed hands is not large. The consumption is scarcely equal to the supply, the stock having increased during February to 8616 tons, against 8268 tons for the previous month, but that in itself alone is not considered to be of sufficient importance to materially be of sufficient importance to materially affect its value. Quicksilver remains at £7. 2/6, without any feature of interest."

Latest Liverpool prices are:

Iron, f. o. b. in Laverpo	юl, ре	r ton.		
	£ 9.	d.	E s. d.	
Merchant bar	5 17	6 @	6 9 0	
" in Wales	5 7	6 @	5 15 0	
Staffordshire	6 10	00	9 5 0	
Hoop		00	8 10 0	
Sheet	8 5	00	9 5 0	
Nail rod	6 15	00	7 5 0	
Bar, best crown	6 10	0 68	7 5 0	
Boiler plates	8 10	00	9 30 0	
Tin Plates, f. o. b. in Live				
			£ s. d.	
Charcoal, I. C	1 0			
Coke, I. C	0 17	0 (3	0 19 0	
Copper, delivered in Liver	pool,	per to	271.	
	£ s.	d	£ s.d.	
Bolt and sheathing	82 0	OB	0 0 0	
	75 0	0 63	0 0 0	
Tough cake	76 0	0 68	0 0 0	
Bost selected	77 0	0 63	0 0 0	

Liverpool weekly petroleum report : troleum.—A moderate business passing in refined oil at 10% d. to 11d. per gallon. Deliveries from and stock in warehouse of refined petroleum and spirit for week ending Feb. 28th: Refined petroleum, 2007 ing Feb. 28th: Refined petroleum bbls.; 16,160 bbls., and 126 cases. 585 bbls.; 6045 bbls., and 276 cases.

#### The Distress in South Wales.

The following report, made by Mr. Simp-on of Liverpool, upon the condition of the istressed districts of South Wales, gives a much better idea of the actual suffering of the people than anything we have seen. The account seems more like that of an Indian famine than of anything happening in Great Britain. He says

Having had the opportunity afforded me facing and judging of the distress existing a South Wales, without delay I place before the public the result of my investigations; and that everyone may thoroughly under-stand at least one point that has evoked a great deal of comment and disturbed some-what the flow of benevolent sympathy, let state why I went down into the distressed districts.

Over a month ago I received offers to rovide work for a number of the colliers at of employment in the South Wales districts from gentlemen engaged in coal-mining operations both in Lancashire and North Wales. These offers of employment having Wales. These offers of employment having been made known to the Rector of Merthyr, first by myself, and afterward by the honor ary secretary of the Liverpool South Wales

Relief Committee, and no response in the form of a supply of men, or offer to supply men, having been made up to Monday last, and as it was made evident that the Liver pool public were somewhat indisposed to contribute relief without, at least, an explanatribute relief without, at least, an explana-tion, I offered to go and investigate the mat-ter if the Liverpool committee would bear the expenses of the journey. This the com-mittee consented to do, and on Tuesday last I started for Merthyr, with a full determina-tion to find out if it was true, as report gave it out, that the Welsh working miner would not take advantage of offered work if he could manage to exist without it. I am could manage to exist without it. I am forced to acknowlege I started on my mission with some misgiving; it seemed so strange that such practical, permanent relief as good employment was not taken immediate advantage of.

On my arrival at Merthyr I at once waited On my arrival at Merthyr I at once waited upon the rector, explained to him the object of my visit, and asked particularly for information on the following points: Ist. Were there many collieries out of work in the district of Merthyr! 2d. Were they in distress as painful as had been described by the correspondent of the Daily News and others? 3d. Were the colliers disposed to work, or was it true that they were only inclined to work at labor that fell in with their particular liking and when it suited inclined to work at labor that fell in with their particular liking, and when it suited them? 4th. Did they object to move out of the district if work was offered them in other parts? In substance the rector's re-plies were as follows: That there were hundreds out of work in Merthyr alone; that the distress among them was far in excess of what had been described; that the men were not only willing but anxious to obtain employment, and would work at anything that offered; and that, although they had a strong liking for "home," he was quite sure they would gladly accept employment anywhere; and, in reply to my request for explanation how it happened, under all these circumstances, that a supply of men had not been sent to Liverpool, he stated that personally he had been so overwhelmed with work that, although he had had the assistance of two clerks attending to the corresponding department, it was as much as could be done to get through it, and in addition he had, in company with his wife, to attend to the distress of some 2500 children, besides other work the distress in the district entailed upon him in addition to his other duties; that it was impossible for him to undertake the responsibility of picking out men to send down; that he had no money at command to pay their expenses; and that (let this be especially noted) he could not find any one willing—in fact there was a decided objection on the part of every one with whom he was associated—to do anything at all in the matter of removing men from the district. He could give no reason for it, but was evidently pained at having to acknowledge that although he was satisfied that the best way of meeting-in fact, the only effective way of coping with

the distress, was to get a lot of the men out of the district altogether; still, for some reason he could not define, he could not obtain co-operation to that end.

Having pointed out to the rector the double injustice to the men involved in this absence of effort on the part of those whose duty it was to assist them—unjust because it was the withholding of the power from the men to go where work awaited them, and was also depriving them of that benevolent sympathy so necessary to them in their distress, and in addition it was calling down upon them a blame they in no way deserve I asked the rector could he, in reason, expect a continuation of help, either from Liverpool or any where else, if the demand for men was not complied with, whether it was for a single one or for a thousand. The rector, fully agreeing in this view, expressed his determination to help me, and on his own responsibility he called a meeting of the unemployed colliers of Merthyr, at the Temperance Hall, for the following night (Wednesday), thus giving me the opportunity of personally making the offer of work to the men; and on Wednesday night the men learned, for the first time, that work had

been waiting for them nearly a month.

I proposed the following plan to the rector for meeting the question of expense. He was to advance out of the funds he had in hand the amount of railway fare required to be employed, I undertaking to see that the men paid back by weekly installments the amount thus advanced, the weekly installments to be a deduction from the wages under an agreement between the men and £30. Shame! I say on all who thus pride the employers. As this was a point that had to be brought before the Committee of Relief at Merthyr, the way in which it was decided is best given in the letter from the rector received by me on my arrival at home.

Salame 1 I say on all who taus pride themselves on their parochial economy while these poor distressed brothers and sisters are perishing for want of bread. Let the poor-rector received by me on my arrival at home.

rector received by me on my arrival at home. The letter is as follows:

"The Rector, Merthyr, Feb. 15, 1878.

"My Dear Sir: I am glad to tell you that I had at once more than double the men you require to take work, and I have no doubt I can get any number—say 500—to go wherever you shall want them. I obtained a loan of £50 from the Starving Children's Fund to prepay, if necessary, the railway fares, after having explained to a large committee of 22 members what you told me, that you to see at work in our own neighborhood. I of 22 members what you told me, that you would be responsible for its being paid back to the fund. But it was not without opposition; that is, 20 voted for it, 2 against it. Please to let me know as early as you can where the men are to be sent to. They are

Please to let me know as early as you can where the men are to be sent to. They are the pick of our colliers, all fine young men, and nearly all single.

"I hope this is a complete answer to the Times, &c., and that it will satisfy our Liverpool friends of the bona fide character of the honest desire of Welsh colliers to work where they can. Some of them were ready to start at once, if they could only get the fare. Some of them actually came straight from underground, with "lamp" in hand, and unwashed, for fear their chance should are seeing how devotedly the family of Lord

you here.
"I hope this will meet you on your return from London to-morrow. Yours truly,
"W. Simpson, Esq. John Griffith.
"P. S.—One thing very worthy of notice—

and pray do note it-not a single man whose I have yet taken asked me this vital tion. What wages are we to have !

Nothing speaks stronger for the men's desire to work. All they want is work anywhere to feed their starving wives—for the children we take care of—and they will take it. Not a question has ever yet been asked about wages and its rate in the neighborhood." All they want is work anywhere to work.

The contents of this letter I think will give eneral satisfaction, for it proves incontest ably that the Wels'i miner is willing to work anywhere if he only has the chance fairly given him. Many of them waited for me coming out of the hotel on Thursday morning, ready to come with me anywhere to get work. The blame of lost opportunities must not, I am satisfied, rest on the men, but must be charged against a selfish greed that would rather keep men in a starving condi-tion than lose the present chance of trying to make a little profit out of a glutted labor

market.
On Wednesday morning I started up the On Wednesday morning I started up the Taff Vale to visit Mountain Ash, Aberdare and Pontypridd. Stopping at Mountain Ash, I walked up to Duffryn Hall, for the purpose of seeing Lord Aberdare, wishing to explain and consult with him on the object of my visit. His lordship being in London, and Lady Aberdare being indisposed, his lordship's eldest son, the Hon. H. C. Bruce, entered warmly into my views and not only tered warmly into my views, and not only promised his fullest support, but at once offered to drive me to Aberdare and Pontyoridd to give me introductions to gentlement ne thought most likely to advance the wishes of those I represented. Unfortunately, the vicar of Pontypridd was from home, and his curate was laid up with bronchitis, and I had only the chance of explaining myself to Mrs. Crawshay, a lady indefatigable in her endeavors to assist the poor by whom she is surrounded; the stipendiary magistrate, Mr. Williams, and a clergyman of the Estab-lished Church, also, I believe, named Wil-liams. This latter gentleman I found busy at work in the soup kitchen belonging to on of the districts into which Pontypridd is divided. From him I had the gratification of seeing how perfect is the system adopted for giving relief, and how by the system it is made almost impossible for imposition to be practiced.

Pontypridd is divided into districts. clergyman of the Established Church and a clergyman of the Established Church and a Dissenting minister have practically the joint charge of a district for relieving purposes. A relief book is kept, and is so arranged that you can tell almost at a glance how much each person receives weekly in wages for work, no matter for whom the work has been performed; how much parish relief is received; and how much relief is given by

the district relief society.

Accompanied by this clergyman, the Hon.

Mr. Bruce and myself made visits into some of the houses of the distressed ones, and for the first time in my life I stood face to face with poverty and distress, misery and wretchedness, utterly beyond the power of man to describe. So intensely painful is it to look upon that its reality becomes almost a question of doubt. To tell you that there was no furniture, no food, hardly any clothes, and only the dying embers of fire, is the simplest language that could be used to convey the intensity of that indescribable misery that must be seen to be in any way under-stood. You must see the human beings that inhabit these weather sheds, and have fastened on your souls expressions from eyes that speak that hope is dead; you must see that speak that hope is dead; you must see the human form divine hanging on, as it were, to its own particles, out of sheer des-peration; you must hear the human voice utter the words, "The parish allows me 2/ a week; out of that I have to pay 1/6 for rent, and 3d. for the burial club, which leaves me 3d. to live upon; and with the ex-ception of a little soup from the kitchen, and sometimes a little tea and sugar Mrs. Crawsometimes a little tea and sugar Mrs. Crawshay gives me, I have not had anything else to live upon for months." All this you must see if you would realize the sorrows that surround the aching woe of that suffering that must exist with her who says, "Look at my arm, sir; let it tell if I am hungering?" or you must hear a mother say, "If I had only bread to keep the children from crying, sir, I could bear it;" or the wife saying, "It's bad enough to have your husband ill, sir, but

to have him ill and starving at the same time it is very hard; it's awful hard!" Yes, and I thought how hardhearted must be those officials who, with kind considera-tion for those who do not suffer, dole out a

to see at work in our own neighborhood. I unhesitatingly declare that the poor law has failed to meet the requirements of the distress, even though supplemented as it has been by public subscriptions, and that a

where they can. Some of them were to start at once, if they could only get the fare. Some of them actually came straight from underground, with "lamp" in hand, and unwashed, for fear their chance should be a late one. With many thanks to you. You have left a grateful remembrance behind you here.

"I hope this will meet you on your return it hope this will meet you on your struly,"

"I hope this will meet you on your return it hope this will meet you on your return it hope this will meet you on your return it hope this will meet you on your return it hope this will meet you on your return it hope this will meet you on your return it hope this will meet you on your return it hope this will meet you on your return it hope this will meet you on your return it hope this will meet you on your return it hope this will meet you on your return it hope this will be a late one. I must not one to the gratification I experienced at seeing how devotedly the family of Lord at seeing how devotedly the family of Lor

to those who have hitherto filled the "bowl," the contract further than to say that they Two thousand pairs of clogs are wanted, and must be sent: a greater blessing cannot be end of the month. The process of handling offered the perishing little ones. These, with stockings, will cost about £200. Who will help to buy clogs !

#### The Stafford Scroll Saw

In this machine we have the novel feature of the saw fastened at the upper end only. All who have used scroll saws have felt the annoyance of being compelled to pass the end of the saw through the wood, fasten it, and then unfasten and pass it out again as each opening is finished, however small the opening may be; and while sawing is a pleasure, continually adjusting the saw is a great inconvenience. In using this machine it is simply necessary to pass the end of the saw down through the wood from the upper s de and commence operations, and when one opening is finished it can be raised clear of the wood, and is at once ready to be passed down through the next opening to be sawed.
The wood need not be raised from the table, as is the case where the saw is passed up from below. The opening in the table is just large enough to allow the saw to pass through, having a solid bearing for the wood. This improvement very greatly lessens the danger of breaking fine patterns. The saw does not break in being driven down through the wood with no wider fastening, because it runs in a slot above and below the table just deep enough to take the back of the saw without injury to the teeth, and only a short distance is exposed to the pressure of the wood. Thus when sawing wood one-quarter inch thick, three-eighths of an inch only of the saw is exposed; the distance



above the wood necessary for the stroke is still confined in the slot and cannot bend sideways, and the pressure of the wood holds it back in position. The guides are so arranged that the opening can be in-creased or decreased to allow for different thicknesses of wood. The usual thickness of wood employed for scroll work can be cut nicely with the saws usually sold for that purpose, but much heavier wood can be cut by using larger saws, which are held as by using larger saws, which are held as easily as the smaller ones. As the saw is confined in the slot, the swaying or "wabbling" motion so frequently met with is avoided, which is a great aid to accuracy of work. Having no spring to overcome the machine, it starts and runs easily and with very little noise. As there is no spring, one serious loss of power between the wheel and saw is avoided and a very perfect control of the speed is obtained. Where a still greater stiffness in the saw is desired, it is obtained by reversing the saw and making it cut upon the up stroke only. The main belt is carried up from the driving wheel around a grooved pulley to another pulley on a countershaft; directly over the saw a crank and connect-ing rod upon the end of the shaft are used

The saw frame and clamp can be raised or lowered as may be desired, leaving room enough below the foot for the wood. The operation of putting in saws and adjusting m is very and easily raised above the wood so as to enter a new opening when "inside work" or inside sawing is being done. There is an arrangement for tilting the table and securing it at any angle. A cup beneath the saw catches the dust and prevents it from fall-ing upon the clothes. An air pump is at-tached to the clamp which keeps the sur-face of the wood free from sawdust. The drill remains at rest except when in use. It is started by shifting the main belt from the pulley at the back of the machine to a smaller one by its side. The machine is complete in itself and can be set on any stand. The No. 2 machine, as shown in cut, will swing. Is inches between earn and form swing 18 inches between saw and frame, has a 12-inch polished iron tilting table drilling attachment, with self-centering steel drill chuck, blower, dust cup, double foot treadle, one drill, one dozen saws, pair cutting nippers and wrench. It is well made and mounted on iron stand with black wal nut top.

It is intended by the patentee to make heavier machines, to be run by power, which will be capable of using larger saws and doing heavier work. The patentee and manufacturer is Mr. N. Stafford, of 66 Fulton street, New York.

Russo-American Grain Elevating Contract.—A cablegram announces that several well-known New Yorkers have received cer-tain concessions from the Emperor of Russia, granting them the privilege of elevating grain throughout the empire. The parties referred to are E. G. Burgess, president of ness of a professed French cook; in fact, praise is due to everyone in the district I visited who ungrudgingly give their time to assuage the bitter distress.

In conclusion, let me make one last appeal In conclusion, let me make one last appeal In conclusion and the district I visited who ungrudgingly give their time to assuage the bitter distress.

Let Burgess, president of the Floating Elevator Co.; L. B. Shaw, president of the Grain Warehousing Co., and T. B. Lane, of the International Grain Elevation. As yet none of the gentlemen consent to speak of the nature of Patentees and Sole Manufacturers,

spoken of have the privilege of introducing their system as a substitute.

Engineers' Club of Philadelphia—Interesting Subjects Considered—Recent meetings of the Engineers' Club of Philadelphia have been especially interesting. At one of them Mr. Charles A. Ashburner read a paper, entitled, "Where is Petroleum Found?" He said the oil regions of Pennsylvania were divided into three districts, viz: The Southwestern, south of the Ohio River and west of the Monongahela River; the Western, along the Allegheny River and tributaries between Pittsburgh on the south and the Philadelphia and Eric Railroad on the north; and the Northern district, north of the Philadelphia and Eric Railroad, extending into New York State. In Pennsylvania 3000 feet of the rocks of the carboniferous and Devonian ages have been found to contain mineral oil. The highest producing "sand" occurs in Wash-ington county, 165 feet below the Pittsburgh coal seam; the lowest in McKean county, 3200 feet below the geological position of the same coal bed. The Bradford oil, in Mc-Kean county, comes from a horizon 400 feet above the lowest. On a basis of a daily pro-duction of 40,000 barrels, each of the nine different "sands" in which oil is found was given its respective production. In speaking of the percentage of risk which the producer experienced in obtaining dry holes the Southwestern district is stated to be the most treacherous, and the Northern the safest, for in the latter the percentage of dry holes is only three wells in every hun-dred. Specimens of the "sands" and crude oils were exhibited, and formed an interestoils were exhibited, and formed an interesting feature of the paper. At the last meeting of the club, a paper on the "South Street Bridge," by Prof. L. M. Haupt, was read. His estimates of the pressure on the piles forming the foundations for the piers of the western approach, had been calculated from data obtained from drawings in the office of the City Engineer. Mr. Haupt thought that as the piles were driven through or into soft mud, which is inundated at every tide, the pressure placed upon them was in excess of their bearing power in such soil, and the cause of the fall of the structure.

Contracts for Rolling Stock.—The Executive Committee of the New York Elevated Railroad Company meet to-day, and are expecting to award contracts for building 30 locomotives and 60 cars. The Gilbert Railway Company are having 60 cars built for them at the Pullman Palace Car Company's works in Detroit, and most of them are already far advanced. They cost \$\$4000 each. \$4000 each.

The Havre (Pa.) Iron Co., who purchased in the Havre (ra.) Iron Co., who purchased in the year 1866 fourtracts of mineral land situ-ated in Harford county, about 16 miles from Havre de Grace, with a special view to the mining of iron ore, have made discoveries mining of iron ore, have made discoveries within the past three or four years of an almost inexhaustible supply of serpentine stone of superior quality upon their property, and the quarrying and preparation of this stone bids fair to develop into an industry of considerable magnitude. The deposit comprises a very large bed of green serpentine, presenting a thickness of about 500 feet, and under this a bed of black mottled serpentine about 800 feet in thickness. The outcrop of the green serpentine has been outcrop of the green serpentine has been traced for a distance of over 1800 feet. It is susceptible of a fine and brilliant polish, superior to verde antique and only equaled to the superior to verde antique and the superior to verde antiqu

by Belgian black marble, and is well adapted for numerous purposes, forming table tops, mantels, columns, &c., of exceptional beauty. The company expect to have a mill in operation by the 1st of May, adapted for running four gangs of saws. It is likely that the serpentine will be used to a considerable extent for ornamental columns.

There is no doubt that the German iron trade will be very favorably influenced by the great railway works projected by France. the great railway works projected by France, Bessemer rails in France have raisen to 250 francs per ton; and although the price in Germany is about 30/ to 35/ per ton lower, we cannot export iron to France on account of the high import duty. But the great demand in France will prevent the French manufacturers from competing with Germany in neutral markets in foreign parts, the German puddling works, baying, bitherto German puddling works having hitherto been subjected to sharp competition by the French ironmasters, particularly by the great iron works at Creuzot; in Italy, Spain, Switzerland, Belgium, Russia, Holland, Turkey, Egypt, and other foreign countries.

—Frankfort Stock Exchange and Commercial Gazette.

The Wells & French Mfg. Co., of Chicago, have recently been incorporated with a capital of \$140,000. The specialty of the company will be the manufacture of cars, turn-tables and builden. and bridges.

### London Metal Market.

é	(From The M	ini	ng Jon	urnal	.)		
e	Iron.	£.	s.	d.	£.	S.	d
	Pig, gmb, f. o. b., Clyde Scotch, all No. 1 Bars, Welsh, f. o. b. Wales	2	XX	0	_		
f	" Scotch, all No. 1	2	13	6	3	10	0
	Bars, Welsh, f. o. b. Wales	15	15	0	15	IO	0
-			15	0	- 6	0	0
е.	" Staff'd, in London	7	15	0	8	0	0
-	" in Type or Tees	5	TO	0	5	15	0
	" Swedish, London	9	15	0	10	0	6
10			0	0	5	2	6
h	Sheets, Staff., in London.	8	15	0	9	0	6
LA	Plates, ship., in London	7	0	0	7	5	0
8	Hoops, Staff	2	15	0	8	0	0
e	Sheets, Staff., in London. Plates, ship., in London. Hoops, Staff Nail Rods, Staff, in L'ndon	6	10	0	7	0	0
	Seed 6. 6.1						
8	English, spring	14	0	0	19	0	•
-	cast	30			40	0	0
	Swedish, keg	10	0	0	-		
n	rag., nam	17	0	0	-		
t	Lead.	-0			-0	-	6
	English, Plg, common L. B W. W. B Sheet and Bar	10	5	0	18	7	Ð
h	6 44 337 33	.0	7	0	-		
t	W. B.	10	15	6	-		
	" Sheet and Bar	19	7	0	-		
n		20	0	0	22		-
h	** Red	22	5			10	0
	White	27	10	0	28	0	0
		-3		6	18	0	
	Spanish	17	17	0	10	0	
- 1	Nickel.	×8	0	0	20	0	
e	Metal, per cwt Ore, 10 per cent. per ton.	10	0	0	26		
	Ore, to per cent. per con.	-	0	U	200		
k	Flasks of 75 lbs., ware	2	2	6	-		
,	~pelier.	-					
		rR.	15	0	18	17	6
r	English Swanses	27	0	0		0/	
e	English, Swansea	22	0	0	23	IO	
	Tin.				-3		•
8	English, ingot, f. o. b bars, Refined	6.7		0	diam'r.		
r	hars. 4	68	0	0			
f	" Refined	20	0	0	-		
	Australian	72	25	0	-		
t	Banca	66	0	0	-		
- 1	Straits	63	15	0	-		
- 1	4 '40 40 40 40 6" -						
- 1	Tough Cake and Ingot	69	6	0	69	0	0
. 1	Best Selected	72	0	0	72	IO	0
a	Sheets and Sheathing	7.4	BO	0	75	0	
- 1	Flat Dottoms	-14	0	0	-		
1	Wallaroo	76	0	0		nom.	
* J	Burra, or P. C. C	73	10	0		nom.	
B	Wallaroo. Burra, or P. C. C. Other brands. Chili bars, g. o. b.	70	0	0	-		
в	Chili bars, g. o. b	55	0	0	_		
- 1	Pro-phor Bronze. Bearing Metal						
3	Bearing Metal	13	0	0	-		
9		30	0		140	0	0
٩I	SFRan.	-	-	01/			
9 1	Wire	0	0	834			
8	Tubes	0	0	10%	_		
- 1	Bneets	0	0	916	-	-	40
y I	Tubes. Sheets. Yel. Met. Sheath. & Sheets	0		9.17	0	0	U
t		0		0,0	0	0	9
	" Tin rintes-# box.		0			x	
-1	Charcoalist qual.	X	10	6			
0	Cobo2d qual.	0	18	0	1	0	0
	Cokezd qual.	0		6	-		
1	Black Wton	16	17	0	16	10	0
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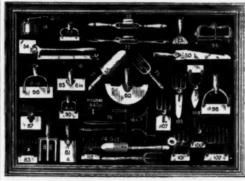
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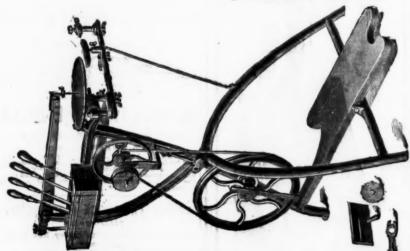
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PRICE FOR EVERYTHING ABOVE NAMED, \$8.00. same, without the Lathe and Circular Saw, \$6.0 When desired, we furnish with the Lathe a very nice Drill Chuck, for working metal, and a Tail Stock, with a screw centre, for \$2 extra. The machine alone weighs 47 lbs., and, with the box, 70 lbs. We also keep a full stock of Tools and Supplies in the Bracket-Sacing line.

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#### Notes upon the Drainage of a Flooded A. | B. | C. | D. | E. Ore Pit at Pine Grove Furnace, Pa.\*

BY JOHN BIRKINBINE, C. E.

In a former paper attention was directed to the various forms of pumping machines employed for permanent work in mining and metallurgical processes. The following is simply a collection of memoranda of work done, and is presented as an index for comparison with other work of similar temporary character.

In close proximity to the charcoal furnace at Pine Grove, Cumberland county, Pa., is a large deposit of superior hematite iron ore, which has been worked for a number of years and from which many thousand tons of ore have been taken by open pit workings. In July, 1874, the furnace was blown out and operations at the bank suspended, the machinery for draining being removed, except a plunger pump 18 inches in diameter and 66 inches stroke, operated by a steam engine by means of rods

engine by means of rods.

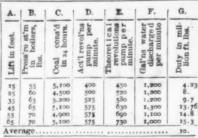
The pit was allowed to fill with water, and no steps toward its reclamation were taken until November, 1877. At that time the pit was a pond of water at the base of the mountain, having an area of about four acres and a depth of 70 feet.

As the pump, rods, &c., had been submerged for over 3 years and partially buried by the mud washed down from the banks, and as it was determined for future operations to change the location and propel by water power, a temporary pumping apparatus was determined upon for reclaiming the pit and keeping it drained until the permanent arrangements could be completed.

By opening an old adit about 10 feet of

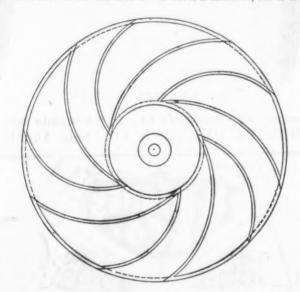
rater power, a temporary pumping appartus was determined upon for reclaiming the it and keeping it drained until the permanent arrangements could be completed.

By opening an old adit about 10 feet of the water was removed and the area de-



Note.—A speed of 400 revolutions per minute gives a velocity at the periphery of the wheel or piston of the pump of 2500 feet; 575 revolutions, 3600 feet; and 730 revolutions, 4600 feet per minute.

The figures in column A show the lift from the surface of the water to the top of discharge hose. Columns B, C, D and F an average. Column E is the speed which the pump should attain, calculated upon the velocity of falling bodies; that is, the velocity of the periphery of the rotary piston should be equivalent to that acquired by a body falling 1½ times the hight of lift, the allowance of 50 per cent. being for friction, &c. Column G shows the duty in million pounds raised one foot high by the consumption of 100 pounds of anthracite pea coal. The figures in column A show the lift from pounds raised one foot high by the consumption of 100 pounds of anthracite pea coal, without any allowances, the quantity of coal consumed, water pumped and hight of lift being only considered. The decrease in the coal consumed at 15 and 25 feet lift was owing to the protection of the steam pipe. As there was considerable condensation in the long steam connection and leakage in the canyas home a fair allowance would place. canvas hose, a fair allowance would place the average duty at, say, 15 million foot pounds and the maximum duty between 20 and 25 millions.



Steam was supplied by four plain cylinder boilers, each 36 inches diameter and 36 feet long, and was conveyed to the engine through from 125 to 200 feet of 2½-inch tubing, and 50 feet of 2½-inch steam hose. The discharged water from the pump was conveyed to the surface of the ground by a 7-inch canvas hose from 90 to 125 feet long, emptying into a pool provided with a weir. An account of coal consumed each 12 hours, speed of pump, hight of water on weir, pressure of steam at boilers and inches of water removed was carefully kept.

water removed was carefully kept.

The work of draining the mine was commenced Nov. 28, 1877, and bottom was reached Jan. 1, 1878, a period of 46½ days.

Of this time five Sundays should be deducted, of this time five Sundays should be deducted, as the pump was not run on the Sabbath until the inflow was so increased as to cause serious detention. There were also 86 hours lost by stoppages to make connections, repair hose, &c. The actual working time of the pump was 37% days, during which 62,000,000 gallons were discharged. The stoppages were caused entirely by adding additional lengths to steam pipe and discharge hose and by repairs to the latter, which was rapidly destroyed by the grit in the water. Seven per cent. of the running time was lost by these stoppages. The machinery consisted of an oscillating steam engine, steam cylinder 10 inches in diameter, stroke 16 inches, driving a band-wheel 6 feet in diameter; a centrifugal pump, herical state of the running time was lost by these stoppages. Seeing Mr. Chubb's name. I must have to have the best finish on their work have the best trade, whether in England or America. 6 feet in diameter; a centrifugal pump, having a revolving piston secured upon a horizontal shaft, upon which was placed a

15-inch pulley.

The pump piston was 24 inches in diameter, had five hollow arms, each having openings of 8 inches in the central chamber and other openings 2 1/2 inches at the other openings 2½ x2½ inches at the periphery. [The accompanying diagram, drawn to a scale of 1½ inch to the foot, shows a section of the piston.] The action of the pump was to draw the water through a short suction pipe 7 inches in diameter, into the central chamber and project it from the outered even into the

creased to three acres. The inflow of springs was found to be 250 gallons per minute, and the amount of water contained in the pit was computed to be 45,000,000 gallons. As the influx would undoubtedly increase while the water sank in the pit, provision was made for removing at least 60,000,000 gallons at the rate of 1,500,000 to 2,000,000 gallons per day.

The company determined to employ a Heald & Cisco centrifugal pump, driven by an oscillating engine by means of a belt. Steam was supplied by four plain cylinder boilers, each 36 inches diameter and 36 feet

#### American and English Locks.

NEW HAVEN, March 5, 1878.

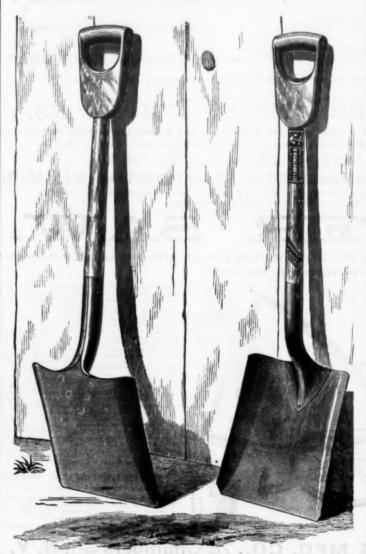
To the Editor of The Iron Age.—Dear Sir: I read in recent issues of The Iron Age about American and English locks. It is not American machine-made locks that England needs, if any, but foundry made. I know a firm in England that has more machinery for making locks than all the housedoor lock makers in the United States put together. As regards finishing the edges of the lock, if the maker was to take the un finished goods to a factor he would be told immediately that he could not sell such work except at a lower rate, compared with other NEW HAVEN, March 5, 1878.

Seeing Mr. Chubb's name, I must have a word or two about that gentleman. He is one of the best employers in England. He has as good a name as Capt. Thorneycroft. Both have their works in Wolverhampton. Many people ask, "Why don't Chubb get machinery to make his tools?" I believe that if he had done so he would have been shut up long ago. So far from that, I do not think he has been shut down one day in the last 40 years, except on holidays. His locks are all made by hand, most of the men not using even the lathe in drilling. With into the central chamber and project it from the outward end of the curved arms into the shell of the pump, and thence through a 6-inch discharge pipe to the canvas hose mentioned.

The agricultural chamber and project it from the breast drill, and using the lathe in drilling. With the breast drill, and using the lathe in drilling. With the breast drill, and using even the lathe in drilling. With the breast drill, and using the lathe in drilling. With the breast drill, and using the lathe in drilling. With the breast drill, and using the lathe in drilling. With the breast drill, and using the lathe in drilling. With the breast drill, and using the lathe in drilling. With the breast drill, and using the lathe in drilling. With the breast drill, and using the lathe in drilling. With the breast drill, and using the lathe is countries as outside. You would be surprised to know what a small number they turn out. They have about 60 pair of hands in the Wolver-The engine and pump, with band-wheel, belt. &c., weighed 6000 pounds and were placed upon a raft so as to follow the water mortice locks are counted a fair week's work and about six padlocks and nine chest locks. So you see they are not overworked. They get the same price for their locks that they did 40 years ago. Everything goes nicely, "Come day, go day, God send Sunday." All get their pay every week. I mever knew them to fail.



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8 2 4 8	Evens & Howard, St. Louis, Mo Gardner, Stuart & Co., Pittaburgh 22 Hall A. & Sons, Perts Amoov, N. J. 22	Di
3	Maurer Henry, 418 East 23d, N. Y	M
5	Valentine M. D. & Bro., Woodbridge, N. J. 22 Watson John R. Perth Amboy, N. J. 22 Weber Adam, 638 E. 15th, N. Y.	M
55	Fire Escapes. Falk L., 165th, N. Y. Filint and Emery Paper and Cleta. Bacler. Adamson & Co. 780 Market, Phila.	(93
7	Baroum E. T., Detro t. Mich.	
888	Fluting Machines. The American Machine Co., Philadelphia	
0 8 8	Forges. Portable, etc.,	IM
3	Paxson J. W. & Co., 514 Beach, Phila	M
5	Furnaces Makers or Richmond & Potts, 119 S. Fourth, Phila., Pa	IM
8	Lafforte Morabell I. 60 Packers 17 17	IVE
5	Grain Gradies.  Grain Fan Mill and Cradle Co., Melrose, Rensselaer Co., N. Y	[M]
1	Grindstones.  Cooper & Holle, Brookiya, N. Y.  Sill Wood, H. H. & Co., 38 West, N. Y.  Wood Waiter H., 288 and 205 Front, N. Y.  Word Waiter H., 288 and 205 Front, N. Y.  Worthington & Sons, North Amberst, O. 531	M
4	Windmuller Louis & Roelker, 20 Reade N. V 18	IVE
2	Gunpowder, Makers of. Kneeland F. L. (Dupont: 70 Wall, N. Y	M
2 2	Bardware Commission Merchanta	N
2000	Tennis & Wilson, Si Beekman N Y 31 Walbridge G. B. & Co., 83 licade, N. Y 27 Hardware Dealers.	N
2		N
1	Hardware importers.  Boker Hermann & Co., 101 Duane, N. Y	N
3 2 6	Windmulier Louis & Roelker 20 Reade N. Y	N
1	Shepara Sidney & Co., Buffalo N. Y.  **Rardware importer Bill Duane, N. Y.  **Boker Hermann & Co., Bill Duane, N. Y.  **Bill Silking & & Co., Broadway, N. Y.  **Yan Wart, Won & Co., Bill and 136 Juane, N. Y.  **Yan Wart, Won & Co., Bill and 136 Juane, N. Y.  **Windmulter Louis & Roelker 30 Reade N. Y.  **Bardware Manufacturers.  **American Spiral Spirine But Co., 28 Beekman, N. Y.  **Bardware Mig. Co., 197 Chombers. N. Y.  **Bardware Mead Mfg. Co., 197 Chombers. N. Y.  **Barth, Bilven & Mead Mfg. Co., 197 Chombers. N. Y.  **Humason & Beckley Mfg. Co., 190 Chombers. N. Y.  **Jumason & Beckley Mfg. Co., 190 Chomb	
3	Lloyd, Supplee & Walton, 625 Market St. Phila. Pa 24 Miller s Falls Mfg. Co 74 Chambers, N. Y	
8	Russell & Erwin Mfg. Co., New York	0
5	Van Wagoner & Williams 52 Beekman, N. Y88 Hardware Specialties. Grant & Co., Newark, N. J	0
3	Van Wagoner & Williams 82 Beekman, N. Y. 88 Hardware Neceinities. Grant & Co., Newark. N	O P
8 9		P
1	Chambers, Bering & Quinlan, Decatur, Ill	P
1	Hoisting Engines, Makers or.  Crane Bros. Mg.c. Co. Chicago, Ill.  9 Mundy J. S. Newark, N. J.  Hoisting Mackings.  Harrington Edwin & Son, Philadelphia, Pa	P
6	New York Handle & Mailet Works, 456 E. Houston32 Horse Clippers. Shannon J. J., Philadelphia, Pa	P
0	Ausable Horse Nail Co. 25 Chambers, N. Y	P
8	National Horse Nail Co., Vergennes, Vt. 21 Northwestern Horse Nail Co., Chicago, III. 25 Patt & Co. Buffalo, N. Y	P
22	Northwestern Horse Nat. Co., Cancago, III. 27 Puttam Nell Co., Neponset, Mass. 27 Puttam Nell Co., Neponset, Mass. 58 Boston Roll Western Staterymarch, Boston Roll Works. Trop. 8. 4 Boston Roll Works. Trop. 8. 5 Bridge Hand Horse Shoe Co., Prividence, R. 1, 25 Schoenberger & Co., Pittsburgh, Pa.	P
8	Wat as Tohn 900 Manage N T	P
4	McLean John St. McLean Hardrad (1984)  Oudgeon Richard, 24 Columbia, N. Y	P
18	Hartford Steam Boller Inspection and Insurance Co. 37  Iron Brokers. Boynton Geo. A., 70 Wall. N. Y	P
0	Hatry A. G., Pittsburgh, Pa. Hazard T. D. 201 Pearl N. Y. Iron. Charcent, Warm or Oold Blass, Oulney John W., 98 William, N. Y.	P
1	Iron Brokers.  Boyston Geo. A. 10 Wall. N. Y.  Etting Edward J., Philadelphia, Pa. 5  Hatry A., G., Pittsburgh, Pa. 4  Hazard T. D. 204 Pearl N. Y.  Hos. Charcent, Warm or Cold Blass, Quincy John W., 28 William. N. Y.  Iron Commission Merchants.  Adams Hugh W., 35 Pine, N. Y.  Lowe S. H., Chattanoogs, Tenn. 6  Spooner & Collus, St. Lonis, Mo. 6  Iron, Pig. Importer or.  Williamson James & Co., 69 Wall. N. Y.  4  Iron Dealers.	P
1 1 1	Pron. Pig. Importer of. Williamson James & Co. 69 Wall. N. Y.  4 Irea Openiers. Abeel Brothers, 199 South, N. Y.  4 Bonnell, Botsford & Co., Youngstown, O.  6 6	r
1	Abeel Brothers, 190 South, N. Y.  Bonnell, Botsford & Co., Youngstown, O	P
1	Huerstei G. 50 Market Silv. 4 Fuller, Lord & Co., 139 Greenwich, N. Y. 4 Harrison & Oiloon, 556 to 562 Water, N. Y. 4 Jackson & Chase, 306 and 306 Franklin, N. Y. 4	P
1	Judson B F, 45; and 469 Water, N, Y Ocaen Wallace, 55, 57,59 and 9l Elm, N, Y Pierson & Co., 24 Broadway, N, Y Ouincy John W, 96 William, N, Y	P
7 8 2	Bonnell, Botsford & Co., Youngstown, O., 6 Borden & Lovell, 70 and fil West, N. Y. Cooney Daniel F., 88 Wasnington, N. Y. Cooney Daniel F., 88 Wasnington, N. Y. Fuller, Lord & Co., 139 Greenwich, N. Y. Fuller, Lord & Co., 139 Greenwich, N. Y. Jackson & Chise, 200 and 208 Frankfin, N. Y. Jackson & Chise, 200 and 208 Frankfin, N. Y. Jackson & Chise, 200 and 208 Frankfin, N. Y. Jackson & Chise, 200 and 208 Frankfin, N. Y. Jackson & Chise, 200 and 208 Frankfin, N. Y. Jackson & Chise, 200 and 208 Frankfin, N. Y. Jackson & Chise, 200 and 208 Frankfin, N. Y. Jackson & Chise, 200 and 208 Frankfin, N. Y. Jackson & Chise, 200 and 208 Frankfin, N. Y. Jackson & Chise, 200 and 208 Frankfin, N. Y. Jackson & Chise, 200 and 208 Frankfin, N. Y. Williamson James & Co., 20 Mangiu 84, N. Y. Williamson James & Co., 20 Wall, N. Y. Williamson James & Co., 20 Wall, N. Y. Jron. (Manufacturers' Agents.) Levis & Kimball, Philadelphia, Pa Jron. Magnification of the Co. Albany and Washington Struck, Magnification of the Co., 20 Mangius, Pa Jron. Magnification of the Co., 20 Mangius, Pa Houlette & Ellis, Boston, Mass. Kirkpatrick, Beale & Co., 21 Mashington, N. Y. Phoenix Iron Co., 310 Washington, N. Y. Phoenix Iron Co., 410 Washington, N. Y. Phoenix Iron Co., 410 Washington, N. Y. Phoenix Iron and Nail Works, Chattanooga, Tenn. 6 Lous & Co., 21 Mashington, N. J. Washington, Pa. Washington, Pa. Washington, N. J. Washington	
17	Williamson James & Co., 69 Wall, N. Y	B
16	Frou, Manufacturers of. Boston Rolling Mills, 17 Batterymarch, Boston	B
39	Burden Iron Works, Froy, N. Y. Cleveland Rolling Mill Co., Cleveland, O	B
16	Kirkpatrick, Beale & Co., Pittsburgh, Pa	H
18 28 10	Phonix Iron Ce., 410 Wainut. Phila	1
916	Snoenberger & Co., Pitisburgn, Pa	B
13	U. S. Irou and Tiu Piate Co., Pittaburgh, Pa	B
84 9- 6	Wood W. D. & Co., Pittsburgh, Ps	8

	T	HE IRON AGE	C
v	Lovegrove & Co., Philadelphia, Pa. 34 Payne B. W. & Sons. Corning, N. Y. 57 Shapley & Wells. Binghamton. N. Y. 37 Twiss Welson W., Swe Haven, Conn. 31	Kitchen Sinks. Magee Furnace Co., Boston, Mass	N
y	Sample	Lanterns, Manayacturers of.  Bietz R. E., (Tubular) 54 and 56 Fulton, N. Y 38  Howard & Morse 45 Fulton, N. Y 3	
	McNab & Harlin Mfg. Co., 56 John, N. Y	Lathe Dogs. North Seiden G., Philadelphia	H
GE.	Faucets, Self-Measuring Makers of. Enterprise Mfg. Co., of Pa., Philo, and N. Y	Donaldson W. Cincinnati. O	18
8	Davis J. B. Hartford, Conn	Chadborn & Colowell Mfg. Co., Newburgh, N. Y18 Lead Pipe. &c., Manufacturers of. Bayley, Farrell & Co., Pittsburgh, Pa	19
11	Car J. & Riley & John, N. Y	Disston Henry & Sons, Phila	
. 84	Sanderson Bros. & Co., 16 Cliff, N. Y	Bonner & Co. Newark, N. J.  Smith & Egre Wig, Co. Bridgeport Cons. 28 Union Nut Co., 96 Chambers, N. Y. 37 Yate Lock Mig, Co., 56 Chambers, N. Y. 7	20 20
98	Files. Manufacturers of. American File Co., Pawtucket, B. L	Yale Lock Mfg. Co., 3d Chambers, N. Y	8
.82 .88 .81	Everhart James M., Scrantov, Pa	Machinery, Makers or, Bilisa & Williams, 197 Pyrmouth. Brooklyv. 37 Pittsburgh. Mrg. Co., Pittsburgh. Pa. 37 Pratt & Whitney Co., Hartford. Conn. 25 Sellers Wh. & Co., 160 Hamilton Phila. 327 The Bullard Machine Co., 14 Dey. N. 7, 16 Wotnerill Kobert & Co., Chester. Ps. 36 Yale Iron Works. New Haven, Conn.	2
.18	McCaffrey & Bro., 1732 and 1734 N. 4th. Phila	machine Screws, Makers of .	Z Z
8	Paul Chas, B. Williamsburch, N. Y.  Fire Hrick, Makers or.  Borgner & O'Brien, Philadelphia, Pa. 24  Brookyn Clay Retort and Fire Brick Works. Van  Dyke, St., Brocker, N. Y. 22  Evens & Howard, St. Louis, Mo.  Gardner, Stuart & Co., Fittsburch, 22  Hall A. & Sons, Fertis Armov, N. 24  Hall A. & Sons, Fertis Armov, N. 24  Maurer Henry, 418 East 236, N. Y. 25  Newton & Co., Albany, N. Y. 22  Vatentine M. D. & Bro., Woodbridge, N. 3  Vaten Son, Rept. Armov, N. 3  Watson John R. Perti Armboy, N. 3  Watson John R. Perti Armboy, N. 3  Weder Adam, 838 E. 15th, N. Y. 32  Fire Escapes.	By the renowants, Co., Williamsonrs, N. Y., 12  Machinists' Toola. Makers of.  Blaindell P. & Co., Worcester Mass. 30  Davis A. J. & Co. Newark N. J. 36  Fundera L. B., Philadelphis. 37  Prentiss H. & Co., 14 Dey, N. Y. 33  Mallen ble Iran Castings. Maker of.	8
.12 .24 .28	Evens & Howard, St. Louis. Mo. Gardner, Stuart & Co., Pittaburgh	F-anders L. B., Philadelphis	8
4	Maurer Henry, 418 East 28d, N. Y	Mallers. N. Y. Haudie & Mallet Works, 456 E. Houston 32	E
85	Valentine M. D. & Bro., Woodbridge, N. J. 22 Watson John R. Perth Ambov, N. J. 22 Weber Adam, 638 E. 15th, N. Y. 22	Manganese. Pyrolusite Manganese Co., 214 Pearl, N. T	8
. 25	Fire Escapes. Falk L., 165th, N. Y	Murray Iron Works, Burlington, Jowa	30 30
. 7	Barnum E. T., Detro t. Mich.	Crane D. O., (04 John. N. Y. 2 Dickerson, Van Dusen & Co. 29 & 3t Cliff, N. Y. 2 Oresg B. L. Co. 118 Wainut Fhila 5 Fheips, Dodge & Co., Cliff, bet. John & Fulton, N. Y. 2 Furves A. & Son, cor. South and Penn, Fhils 5 Gulney J. W. se William, N. Y. 23 Seilew H. & Co., St. Louis Mo. 2	(B) (B)
88 88 83	Fluting Machines. 34 The American Machine Co., Philadelphia. 34 Weeks A. A., 82 John. N. Y. 15 Forges. Pertable, etc. Keystone Portable Forge Co., Philadelphia. 25	Quincy J. W., is William, N. 7	8
80	Brown T. J. Rockwood, Tenn	Metal Fibows. Hogen Ebow Co., Cleveland. O	20
8	Foundry Facings. Paxon J. W. & Co., 514 Beach, Phila. Whitehead Bros., 517 W. 15th, N. Y.  Furnaces. Makera or	Metals Pertorated.   Hayes G., 71 8th ave	
.25	Richmond & Potts, 119 S. Fourth, Phila., Pa 5 Furniture Springs, Eary & Moen, 234 W. 29th, N. V.	Mica. The Chester Mica and Porcelain Co., 87 Liberty, N. Y.28	94
6	Lefferts Marshall Ir 90 Beakman W W	Miners' Candles. Makers of James Boyd's Sons. 10 and 12 Franklin, N. Y	20
. 25	Grain Cradles, Grain Fandles, Grain Fandli and Cradle Co., Melrose, Rensselaer Co., N. Y. Grindstones, Cooper & Holle, Brooklyn, N. Y.	Mineral Wool. Elbers, Alexander D., 26% Broadway, N. Y 5 Models. Burrows Wm. 90 Entern N. V.	8
.24	Grindstones.   Grocklyn, N. Y.   31   Wood, H. S. & Co. 35   West, N. Y.   31   Wood Walter R., 283 and 295   Front, N. Y.   31   Worthington & Sons, North Amberst, O.   31   Green & Grocklyn, N. Y.   31   Worthington & Sons, North Amberst, O.   31   Green & G	Burrows Wm. 99 Fulton, N. Y	
.29	Windmuler Louis & Roelker, 20 Reade N. Y16 Gunpowder, Makers or, Kneeland K. L. (Dunony, 20 Wall N. W.	Mouse Traps.   Dietz R. E., 54 and 56 Fulton, N. Y	8
. 82	and towder Co. so Murray, N. X30	Mowing Machine Knife Grinder, Fisher Henry, Canton, O	8
	Hardware Commission Merchants     Bizile Philip S., 10 Chambers N. Y   35     Granam & Haines   13 Chambers N. Y   37     Heaton & Denckla, Philadeiphia, Pa   35     Samuel S. L., 57 Cedar, N. Y   31     Tennis & Wilson, 51 Beekman N. Y   31     Walbridge G. B. & Co., 83 keade, N. Y   27	Aurora Iron & Nail Co., Aurora, Ind	
. 2	Walbridge G. B. & Co., 83 Reade, N. Y	Nail Machinery. Coyne & Hatry. Pittsburgh, Pa	
. 4	Brower John L. & Son, 288 Greenwich, N. Y. 9 Lioyd. Supplee & Walton. 68 Market. Phila. 22 Quackconjun, Townsend & Co., Speade, N. Y. 92 Shepara Sidney & Co., Buffalo N. Y. 27 Hardware Importers.	Hartman John 3714 N. Seventh, Philadelphia. 28 Jackson Geo. W., M. E. 18, N. Y. 28 Nickel Platers' Supplies. Colt A. T., 47 Beckman, N. Y. Zucker & Levett. 639 & 641 W. 51st, N. Y. 23	2 2
.31	Hardware importers.  Boker Herman & Coo III Duane, N. Y	Rowland Wm. & Harvey, Frankford, Phila	-
.83 . 6 . 7	Hardware Manufacturers. American Spiral Spring Buts Co., 82 Beekman, N. Y., 28 Cowles Hardware Co., Uniouville, Conn	Note Broker. Gailanget r. W 3 and 5 Wall. N. Y	-
.34	Windmulier Louis & Roelker 20 Reade N. Y.  Hardware Manninotts-Frs.  American Solral Spring Butt Co., 22 Beekman, N. Y. 58 Cowles Hardware Co. Union tille, Conn. 13 Enterprise Mtg. Co. Phila. 13 Hart. Bilven & Mead Mfg. Co. 107 Chambers, N. Y. Humason & Beckley Mfg. Co. 109 Chambers, N. Y. 32 Lioyd, Supplee & Walton, 62 Market St, Phila Pa. 24 Miller & Falls Mfg. Co. 74 Chambers, N. Y.  Newman A. G., 113) Broadway, N. Y.  21 Pratt & Co. Buffalo, N. Y.  22 Pratt & Co. Buffalo, N. Y.  23	Fuier Bros. & Co., 18 dreenwith, N. Y. 4 Hoskell W. H. & Co., Fawtucket, K. 1 Lewis, Oliver & Phillips, Pittaburch, Fa. 1 Russell, Birdsall & Ward, Port Chester, N. Y. 8 Shetton Co., Birnknaham, Comm. 8	
.18	Newman A. G., 113) Broadway, N. Y. 21 Pratt & Co., Buffalo, N. Y. 27 Russell & Erwin Mfg. Co., New York 10 Sedewick Mfg. Co., Ponyhkeenste N. V. 50	Sternbergh J. H., idealing, Pa	
8	Newman A. G. 113 Broadway, N. Y. 21 Pratt & Co. Burfalo, N. Y. 27 Russell & Erwin Mfg. Co., New York. 10 Sedgwick Mfg. Co., Poughkeenede, N. Y. 20 Stanley W-rks, New Biftain, Conn. 12 Union Mfg. Co. 99 Chambers, N. Y. 7 Van Wagoner & Williams 82 Beekman, N. Y. 88	Otters. Morton Otter Co., Biddeford, Me	
2	Van Wagoner & Williams of Determan, N. Y. 88  Hardware Pspecialities.  Grant & Co., Newark, N. J. 33  Jesaup & Steriine, 7 and 9 Cliff, N. Y. 4  Semple & Birge Mg. Co., St. Louis, Mo. 31  Snepart Sidney & U., Buffalo, N. Y. 27  Spencer & Underhill, 91 Chambers, N. Y. 27	Boyd & Chase 107th and Harlem River, N. V	ı
13	Covert Mfg. Co., Troy, N. Y	Old Iren, etc	
h. .31	Hinges. Lewis, Oliver & Phillips, Pittsburgh, Pa. 18 Hog Ringers Chambers, Bering & Quinlan, Decatur, Ill	P.ttahurgh Iron Paint Co. Pittahurgh, Pa 37	
81	Chambers, Bering & Quinlan, Decatur, III. 83 Hoisting Englines. Makers of. Crane Bros. Mig. Co. Oblicago, III. 9 Mundy J. S. Newark, N. J. 86 Hoisting Muchines. 88	Paints and Olls, Deaters in. Devoe F. W. & Co., 1ft Fulton, N. Y. Paus, (Orlipping and Bread.) Lewis, Daizel & Co., Pittaburgh, Pa	
.11	Harrington Edwin & Sou, Philadelphia, Pa	Howson & Son, Phila. and Washington, D. C. 21 Lenz & Schmidt, Berlin, N. W. 24 Snencer A. H. 48 State Boston, Mass. 24 Stetson Thomas D. 23 Murray N. Y. 34	•
82	New York Handle & Mailet Werks, 456 E. Houston32 Horse Clippers. Shannon J. J., Philadelphia, Pa. 25 Horse Nalls, Makers of Ausable Horse Nail Co 25 Chambers. N. Y. 25 Globe Nail Co., Boston, Mass. 5 Ghose Nail Co., Boston, Mass. 5 Horse Nail Co. Cleveland, O 25 National Horse Nail Co., Cleveland, O 25 National Horse Nail Co., Cleveland, O 27 National Horse Nail Co., Clicago, Ill. 23 Patt & Co. Buffalo, N. Y. 27 Patta & Co. Buffalo, N. Y. 27 Putnam Nail Co., Neponset, Mass. 4 Horse Shoes. Makers of Shoes. Makers of Shoes. Makers of National Horse Shoes Co., Providence, B. L., 25 Schoenberger & Co., Pittsburgh, Pa. 4 Hydranis, &c. 4	Pens (Steel). Perry & Co. Limited, 112 & 114 William, N. Y28 Picks, Makers of Pierson & Co. 24 Broadway, N. Y	
30	Globe Nail Co., Boston, Mass. 25  HP Horse Nail Co., Cleveland, O. 25  National Horse Nail Co., Vergennes, Vt 21  Northwestern Horse Nail Co., Chicago, Ill. 25	Pipes, Fittings, etc., Makern 01.         Eaton. Coje & Burnham Co., 58 John. N. Y.         25           McNab & Harlin Mig. Co., 56 John. N. Y.         25           Pancoast & Maule, 27 Pear. Phila.         25	1
8	Patt & Co. Bunalo, N. Y.  Putnam Nali Co., Neponset, Mass, 8  Horse Shoes, Makers of, Boston Rolling Mills, 17 Batterymarch, Boston. 4	Pancons e saule. 4s: Fear. Finia	
. 33	Burden from Works. Troy, N. Y.  Rhode Island Horse Sluce Co., Providence, K. I., 25  Schoenberger & Co., Pittsburgh, Pa. 4  Hydramis. & C.  McLean John, 300 Monroe, N. T. 37	Wood B. D. & Co., 400 Chesnut, Phila	-
28	McLean John, 30 Morroe, N. 1 37 Hydraulie Jacks, Dudgeon Richard. 2/ Columbia, N. Y 35 Lyon E. & Co., 42 Grand, N. Y 37	Planes. Manufacturers of D. R. Barton Tool Co., tiochester, N. Y	
23	Insurance, Better.	Pinted Ware Derby Silver Co., Derby, Ut	ı
34	Hartford Steam Boller Inspection and Insurance Co. 57  Iron Brokers. Boynton Geo. A. 70 Wall, N. Y.  Etting Edward J., Philudelphia, Pa. 5  Hatry A. G., Pittsburgh, Pa. 4  Hazard T. D. 20 Fern A. Cold Blass. 4  Iron. Charles The Cold Blass. 4  Iron. Charles William, N. Y.  Adms Hugh W., 58 Plue, N. Y.  Lowe S. R., Chattanooga, Tenn. 6  Spooner & Collon, St. Lonis, Mo.  Iron. Plag. Importers of.	Pinwe, Meikle Thomas & Co., Louisville, Ky	1
31	Quincy John W., 98 William. N. Y	Pocket Knives.	E
.11	Spooner & Collins, St. Lonis, Mo	Boxer Remain & Cot, 60 Banas, X. 1. 11 Portable Cooker: Threne G. L. & Co. 78 Warren, N. Y	5
. 11	Iron Dealers. Aboel Brothers, 190 South, N. Y. Bonnell, Botsford & Co., Youngstown, O	The Stiles & Parker Press Co., Middletown, Ct., 87  Pressure Blowers, Makers of, Keystone Portable Forge Co., Philadelphia 25  Pulleys, Eriction.	
11 11 11	Huerstel G. 99 Market Slip. N. Y. Fuller, Lord & Co., 139 Green wich. N. Y. Hurrison & Ollioon. 556 to 562 Water. N. Y. Lorgeon & Chase. 206 and 308 Franklin. N. Y.	Prileys, Friction.  Mason Voluev W. & Co., Providence, R. I	
	Judson B F, 45; and 459 Water, N. Y	Pump Pistons. Sprague vm. & Co., Philadelphia, Ps	
28	Richards D. W & Co., 92 Mangin St., N. V. Wallace Win, H. & Co., Albany and Washington streets, N. Y. Warrett, N. Y. Warrett, N. Y.	Sprague vm. a Co., Franadelphia, Fa. 39  Pumps, Molers of;  Douglas W. & B., Middletown Conn. 7  Nason Mrg. Co., 71 Fulton, N. Y. 7  Rumsey & Co., Seneca Fails, N. 7  Rumsey S. M. & Co., St. Louis, Mo. 84  Union Mrg. Co., 95 Chambers, N. Y. 7  Relitzed Sanatie	
38	Williamson James & Co., 69 Wall, N. Y. Whitney A. R. & Bro. 58 Hudson N. Y.  Iron. (Manufacturers' Agents.) Levis & Kiphall. Philadenthia Pa	Union Mfg. Co., 26 Chambers, N. Y.  Raitread Supplied.  Jackson & Tyler Baitmore, Md.  Raits, Iron or Steed, Makers of, Atkins Bros., Pottsville, Pa.  Cambria Iron Co., Johnstown, Fa.  Cleveland Rolling Mill Co., Cleveland, O.  The Edgar Thomson Steel Co., 27 Broadway, N. Y. 31  RWilson, Walker & Co., Pittaburgh, Pa.  4 Razer Straps, Makers of, B. Badger & Son. Charlestown. Mass.  34  Refrigerstors.	(
26	Boston Roiling Mills, 17 Batterymarch, Boston	Cieveland Rolling Mill Co., Cieveland, O.,	
. 34	Cleveland Rolling Mill Co., Cleveland, O	Razer Straps, Makers of. B. F. Badger & Son. Charlestown. Mass	
36	Kirkpatrick, Beale & Co., Pittsburgh, Pa. 4 Leonard John, 450 & 451 Wess at, N. Y. 4 Oxford Iron Co., 81 Washington, N. Y.	B. F. Dauget & Out. Chairestown ass. St. Refrigerators. Lesley Alex. M., 226 W. 23d, N. Y. Revolving Scrapers. Revolving Scraper Co., Columbus, O	
18 28	Phonix Iron Ce., 410 Wainut. Phila	Grundy, Geo. C. 185 Greenwich, N. Y	-
86	Snoenberger & Co., Fittsburgh, Pa	Road Scrapers. &c., Semple & Birge Mg. Co., St. Louis. Mo 6  Roiling Mili Machinery. etc Manufacturers of Moore James, Cor 16th and Buttonwood, Phila 57	
87	U. S. Iron and Tin Flate Co., Pittaburgh, Pa	Rubber Buck -tw. Corey A. L., Ypsilanti, Mich	
84 itto- 6 24	Wood W. D. & Co., Pittsburgh, Pa	Moore sames, Cor 18th and Buttonwood, Phila. 37 Rubber Buckt -is. Corey A. L., Ypallanti, Mich. Ruies, Manufacturers or. Stannev dule and Level Co. 35 Chambers St. 35 Stophens & Co. Riverton, Con. 8 Sandters' Tools. Sandters' Sa	
. 36	Williamson James & Co. & Wall. N. Y.  Iren Opchiers. Abeel Brothers, 190 South, N. Y. Bonnell, Botaford & Co., Youngstown, O. 6 Borden & Lovell, 70 and 11 West, N. Y. Cooney Daniel F. 88 Wasnington, N. Y. Huerstel G. 99 Market Slip, N. Hernords D. W. & Co., 29 Mangen St. N. Y. Honords D. W. & Co., 29 Mangen St. N. Y. Honords D. W. & Co., 29 Mangen St. N. Y. Honords D. W. & Co., 29 Mangen St. N. Y. Honords D. W. & Co., 29 Mangen St. N. Y. Honords D. W. & Co., 29 Mangen St. N. Y. Honords D. W. & Co., 29 Mangen St. N. Y. Honords D. W. & Co., 29 Mangen St. N. Y. Honords D. W. & Co., 29 Mangen St. N. Y. Honords D. W. & Co., 29 Mangen St. N. Y. Honords D. W. & Co., 29 Mangen St. Houldette S. Ellis, Boston, Mass. Kirkpatrick, Beale & Co., 20 Mangen G. Houlette & Ellis, Boston, Mass. Kirkpatrick, Beale & Co., 20 Mangen, N. Honords John, 80 & 431 West St. N. Y. Honords John, 80 & 431 West St. N. Y. Honords John, 80 & 431 West St. N. Y. Honords John, 80 & 431 West St. N. Y. Honords John, 80 & 431 West St. N. Y. Honords John, 80 & 431 West St. N. Y. Honords John, 80 & 431 West St. N. Y. Honords John, 80 & 431 West St. N. Y. Honords John, 80 & 431 West St. N. Y. Honords John, 80 & 431 West St. N. Y. Honords John, 80 & 431 West St. N. Y. Honords John, 80 & 431 West St. N. Y. Honords John, 80 & 431 West St. N. Y. Honords John, 80 & 431 West St. N. Y. Honords John, 80 & 431 West St. N. Y. Honords John, 80 & 431 West St. N. Y. Honords John, 80 & 431 West St. N. Y. Honords John, 80 & 431 West St. N. Y. Honords John, 80 & 431 West St. N. Y. Honords John St. Honords John St	Baeder, Adamson & Co., 780 Market, Phia	

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	Sa wa. Makers of.  American Saw Co., Trenton, N. J	
1	Boynson E. M., 80 Beekman, A. Y	
		1
	Saw Frames, Wood, Makers of, Peace Harvey W. Williamsburg, N. Y	-
	Francion Mfg. Co., Brandon, Vt. 24 Chattilion John & Sous, 91 Cliff, N. Y. 9 Rienie Bros., 8th above Master, Phils. 55 Southwark Hardware Co., Philadelphia. 23	
	Screws, Makers of, American Screw Co., Providence, R. 1	1
	Miles F. S., 205 Quarry, I'hlia	
	Bruce Geo. W., 1 Platt. N. Y	t
i	Screw Cutting Machinery. Whiey & Russell Mfg. Co., Greenfield Mass35	ı
	Screw Drivers, (happened) Makers of	1
	Screw Drivers, (Insprosed) Makers of, Diaston Heavy & Sons, Phila. Wilkinson H., Collinsville, Conn	1
	Scythe Stones.	1
	Scythe Stones. Dishulan F. E., New Albany, Ind	1
	Bewer tina Traps.	1
	Runrer S., Cleveland, O	1
1	Mhafting. Wood Themas, Philadelphia	1
,	Wood Insmas, Friladelpols.  **Thovels, &c.**  **Hubbard, Bakewell & Co., Pittaburgh, Pa	1
	Hussey, Rinns & Co., Pittsbur 1, Pa	1
i	Remington E. & Sons, 57 Reade, N. Y	ı
į	Shot, etc.	١
	Shot, etc. Sparks Thos. W., 121 Walnut, Philadelphia29 Shears.	ı
	Cleveland Hardware Co., Cleveland, O	١
1	Shears (Sheep).  Hidock A. H. & Co., 12 Warren, N. Y	1
,	Wilkinson H., Collinsville, Conn	1
	Topiff & Ely, Elyria, O.	١
	Sleigha. Croshy, Gilzinger & Co. Rondont N. V.	1
	Smetting Works.	1
	Sleigha. Crosby, Gilzinger & Co., kondout, N. Y. 8 Smeeting Works. Reeves Paul S., 780 South Broad St. Phila. 38 Speiter. Manning & Squier, 113 Liberty N. Y. 2 Springs.	1
	Springs.	
1	Rowland Wm. & Harvey, Frankford, Phila	١
	Shepard Sidney & Co., Buffalo, N. Y	ı
ı	Steam Hammers, etc., Makers of.	ı
1	Bteam Pumps etc., Manufacturers of	1
	Cameron A. S., East 23d, N. Y	1
1	Crane Bros. Mig. Co. Unicago, Ill	1
	Manning & Squier, 113 Liberty N. Y. 2 Springs. Cary & Meen, 234 W. 28th, N. Y. 8 Rowland Wm, & Harvey, Frankford, Phila. 38 Stamped and Japansed Tip Ware. Shepard Sidney & Co., Buffalo, N. Y. 27 The Chicago Stamping Co., Chicago, Ill. 8 Steam Hammeres, etc., Maker at. Duageon Richard, 24 Columbia, N. Y. 35 Steam Hammeres, etc., Manufacturers at. Cameron A. S., East 23d, N. Y. 55 Chayton Jas., 11 Water, Brookiya, N. Y. 35 Crane Bros, Mig. Co., Chicago, Ill. 9 Knowies Steam Punp Works, 32 Liberty, N. Y. 36 McGowan John H. & Co., Chichnatt, O. 37 Steens Trans	1
	Secam Trans Abany Steam Trap Co., Albany, N. Y	1
	Chester Castings Co., Evelina, Phila, Pa	1
	Flagg Staniey G. & Co., 216 & 218 N. 3rd, Phila38	1
1	#Ittaburgh Steel Casting Co. Pittaburgh, Pa	1
I	R. H. Wolff & Co., 16 Culff, N. Y	1
ı	Jonas, Meyer & Colver, Hartford, Conp. 90	1
I	Moss F. W., 80 John, N. Y	1
l	Van Wart, Son & Co., 134 and 136 Duane, N. Y11 Steel (Mushet Special).	1
ı	Randall & Jones 10 Oliver Boston Mass	1
1	Cleveland Rolling Mill Co. Cleveland. O 4	1
	Mayale Steel Works, Micetown, Phila., Pa30	1
1	Miller Metcalf & Faikin, Pittsburgh. 39  Rowlano Win. & Harvey, Franktord Phila. 8  Sanderson Bros. Steel Co., Syracuse, N. Y. 39  Smith, Sutton & Co., Pittsburgh, Pa. 39  Singer, Simick & Co., Pittsburgh. 39	1
1	Sanderson Bros. Steel Co., Syracuse, N. Y	1
1	Singer Nimick & Co., Pittsourgh	1
1	Smith, Sutton & Co., Pittsonigh, Pa. 20 Singer, Shimick & Co., Pittsonigh. 3 Sweet's Mfg. Co., Syracuse, N. Y. 30 The Edgar Thomson Steel Co., St Broadway, N. Y. 31 Wardlow S. & C., Sheffield, England. 30	1
1	wardlow S. & C. Sheffield, England. 30 Steel Shutters. Clark & Co.'s 162 & 164 W. 27th, N. T. 9 Steel Shiral Sherings. Manufacturers of	1
1		1
	Cary & Moen, 234 W. 29th, N. Y	1
-		
1	THAILED A	-

84	Stacks and Dies. Holroyd & Co., Waterford, N. Y
.88	Stokera.
34	Smith Dillwyn, 18 S. 5th, Philadelphia
31	Metal Stamping & Enameling Co. St. Louis, Mo
	Stove Boards, Manufacturers of Ansonis Brass and Copper Co., 19 and 21 Cliff, N. Y., 9 Shebard Sidney & Co., Buffalo N. Y.,
.34	Shepard Sidney & Co., Buffalo N. Y
24	Sugar Spont. Post C. C., Burlington, Vt
. 9	Tacks.
9 86 88	Dunbar, Hobart & Whidden, 116 Chambers, N. Y21
	Grundy Geo. C., 165 Green wich, N. Y.
29	Tacks.  Dunbar, Hobari & Whidden, 118 Chambers, N. Y. 21  Pielo A. & Sons. Taunton, Mass.  Grundy Geo. C., 185 Greenwich, N. Y. 32  Shelton Co., Birmingham, Ct. 29
19 13 18 10	Taps and Dies.         29           Manning H. S. & Co., 111 Liberry, N. Y.         34           H. Prentiss & Co., 14 Dey, N. Y.         33
10	H. Prentiss & Co., 14 Dey, N. Y
. 6	Tin Pinte, Manufacturers of
	Try Neuares, Revels &c., Makers of Balley Leonard & Co., Hartford, Ct. 9 Disston Henry & Sons, Phila.
.85	Disston Henry & Sons, Phila.
	Tube Brushes. Haurey Henry F., Newark, N. J
11	Haurey Henry F., Newark, N. J
81	Tube Expanders. Dudgeon Richard. 24 Columbia, N. Y
21	Tubular Bow Pockets. Topliff & kly, Elyria, O
25	Twist Dritts, Maxers of
4.5	Twist Drills, Maxers or. Morse Twist Drill & Mach. Co., N. Bedford Mass 33
87	Tuyere Irona. Harkins & Pray, Bristol, Pa
18	Upholsterers' Goods. Turner & Seymour Mfg. Co., 8: Reade, N. Y
35	Turner & Seymour Mfg. Co., 8' Reade, N. Y
35	Valves, Gas, Water and Steam, Ludlow Valve Mfg. Co., Trov. N. Y
-4	Modaws and Hudson Mig. Co., Waterford, N. V. 34
29	Ventilators. Bracher Ventilator Co., 8 Park Row, N. Y 8
	Visco
	Millers Falls Co., 74 Chambers, N. Y. 21 Flaher & Norris Trenton, N. J. 34 Trenton Viae & Toos works, 101 & 108 Duane, 55 2, 34
11	Trenton Vise & Toos Works, 101 & 108 Duane, 15 2 .34
	Water Cooler. Jewett John C. & Sons, Buffalo, N. Y
18	Water Wheels (Turbine). Alcott F. C. & Son. Mount Holly, N. Y
8	Weather Strips. Bracher Ventilator Co., 3 Park Row, N. Y
.38	Bracher Ventilator Co., 8 Park Row, N. Y 8
	Pugsley & Chapman, 6 Liberty, N. Y
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38	Semple, birge & Co., St. Louis, Mo
27	White Lead, Manufacturers of Brooklyn White Lead Co., 89 Maiden Lanc. N. 1 20
8	Colgate Robert & Co., 487 Pearl, N. Y.
.85	White Lead, Manufacturers of Brooklyn White Lead Co., 89 Maiden Lane, N. 1. 29 Colgate Robert & Co., 85, Pearl, N. Y. 29 Jewest John & Sons 108 Front, N. Y. 29 Lewis John T. & Bros., 251 S. Front, Phila. Ps. 29
9.6	Window Springs, Makers of Hammond W. S., Lewisberry, Ps. 28 Wire Drowing Machinery, Held S. & Son, Barre, Mess.
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36	Held S. & Son. Barre. Mass.  Wire. Manuracturers of. Cary & Moen. 234 W. 29th. N. Y. Gilbert & Bennett Mig. Co., 223 Fearl, N. Y. Harrison Wire Co., St. Louis, Mo. New Haven Wire Work, SS Cliff, N. Y. Prentlas Geo. W. & Co., Holyoke, Mass. Hoberts Henry, Newark, N. J. Washburn & Moen Mig. Co., Worcester, Mass. Trenton Iron Co., Trenton N. J. Worcester Wire Co., Worcester, Mass. Wire Gauges.
36 37	Cary & Moen, 284 W. 29th, N. Y
84	Harrison Wire Co., St. Louis, Mp.
35	Prentiss Geo. W. & Co., Holyoke, Mass.
38	Roberts Henry, Newark, N. J.
86	Trenton Iron Co., Trenton N. J.
.30	Wire Gauges.
30	Brown & Sharpe Mfg. Co., Providence, R. L 9
90	Corning Jasper E. SSCHR, N. Y.
4	Gilbert & Bennett Mfg. Co., 273 Pearl, N. V
11	Howard & Morse. 45 Fulton, N. Y
80	Worcester Wire Co., Worcester, Mass. 3 Wire Gauges. 1 Nrown & Sharpe Mfg. Co., Providence, R. 1. 9 Wire Gaoda, Manufacturers or, Corning Jasper E., 18Cliff, N. Y. Gilbert & Leonatt Mg. Co., 23 Fearl, N. Y. 2 Howard & Morse, 45 Fulton, N. Y. 0 Oliver E., 106 & 108 Beekman St., N. Y. 3 Wire Nails. Dunbar, Hobart & Whidden, 116 Chambers, N. Y. 21 Dunbar, Hobart & Whidden, 116 Chambers, N. Y. 21
4	Hassall William, 63 & 65 Elizabeth, N. Y21
31 30	Wire Rope, Iron and Steel. Makers of.
30	Roebling's John A. Sons. Trenton, N. J.
38 30	Adams F. F. & Co., Erie, Pa
30	Wrenches, Manufacturers of.
30	Coes A. G. & Co., Worcester, Mass 82
31 30	Wringers,
9	Adams F. F. & Co., Erie, Pa
3	Bailey Wringing Machine Co., 99 Chambers, N. Y
9	Oliver E. 106 & 105 Beckman St., N. Y.  Vire Natis.  Dunbar, Hobart & Whidden, 116 Chambers, N. Y. 21 Hassali William, 63 & 65 Elizabeth, N. Y. 22 Wire Rope, I ron and Steel. Makers of, Hazard Ma, Co., Wilkesbarre, Pa.  100 bolling's John A. Sons. Trenton, N. J.  Adams F. F. & Co., Erie, Pa.  21 Vrenches, Manufacturers of, Benils & Call Hdw. & Tool Co., Springfield, Mass. 32 Coes L. & Co., Worcester, Mass. 32 Coes L. & Co., Worcester, Mass. 32 Wingers, Adams F. F. & Co., Erie, Pa. 21 Alexander T. J., Boston, Mass. Balley Winging Machine Co., 99 Chambers, N. Y. Feoriess Winging Machine Co., 99 Chambers, N. Y. Feoriess Winging Machine Co., 99 Chambers, N. Y. Feoriess Winging Machine Co., 99 Chambers, N. Y. From Stringer Co., Cincinnati. O.  The American Machine Co., 111delphbis. 34
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#### Scientific and Technical Notes

Prof. R. H. Thurston, of the Stevens Institute of Technology, in arranging the

HEATING SURFACE OF A STEAM BOILER, lays down as the essential rule that the effort be to impede the draft as little as possible, and so to place them that the circulation of water within the boiler be free and rapid at every part reached by the hot gases. The directions of circulation of water on the one side, and of gas on the other side of the sheet should as reach as presible he of the sheet should, as much as possible, be opposite. The cold water should enter where the cooled gases leave, and the steam should be taken off furthest from the point. The temperature of chimney gases has thus been reduced by actual experiment to less than 300 deg. Fahr., and an efficiency equal to 0.75 to 0.80 of the theore ical is attainable. The extent of heating surface simply, in all of the best forms of boiler, determines the efficiency, and the disposition of that surefficiency, and the disposition of that surface seldom affects it to any great extent. The area of heating surface may also be varied within very wide limits without greatly modifying efficiency. A ratio of 25 to 1 in flue and 30 to 1 in tubular boilers represents the relative area of heating and grate surfaces in the practice of the best-known builders, and this of course furnishes a safe criterion. The material of a boiler, says Prof. Thurston, should be tough and ductile iron, or what is better, a soft steel containing only sufficient carbon to insure melting in the crucible or on the hearth of the melting furnace, and so little that no the melting furnace, and so little that no danger may exist of hardening or cracking under the action of sudden and great changes of temperature. Where iron is used, it is necessary to secure a somewhat hard but homogeneous and uniform quality for the fire-box sheets or any parts exposed to the flames.

Mr. John Bourne, C. E., of Mark Lane London, has patented a device to prevent

HONEYCOMBING IN CASTINGS, HONEYCOMBING IN CASTINGS, by which he extracts from the metal while in the molten state the gas or gases by which the honeycombing is produced. The removal of the gases may be effected by the aid of any mechanical means capable of producing rarefaction, such as a common pump, an exhausting jet of steam or other fluid, the hydrostatic gravitation of a column of the molten metal itself, or any other exhausting expedient, by which a vacuum more or less perfect is produced. The molten metal must be exposed to the action of the vacuum in such a manner as to insure the disengagement of the gas from the metal, and for this purpose he submits the metal to the vacuum preferably in a state of minute subdivision. This may be accomplished by allowing the molten metal to run through perforations in a fire-clay block into a tall cylinder, within which a vacuum is maintained. By thus subdividing the metal, and discharging it in the form of a metallic rain into an exhaust chamber, the gases are separated from the metal, and are sucked away by the pump or other extractor in communication with the exhaust chamber. He remarks that it is not intended to subdivide the molten metal (without the aid of a vacuum) for the removal of the gases, nor to attempt to suck away the gases from a which he extracts from the metal while a vacuum) for the removal of the gases, nor to attempt to suck away the gases from a vessel filled with molten metal by producing a vacuum above the metal, as the hydro-static pressure of the metal itself would static pressure of the metal itself would under such circumstances retain the gases within the metal, notwithstanding the existence of the vacuum above it; but he extracts the gases by the conjoint action of the vacuum and of the subdivision, as above explained, or by analogous or equivalent means embodying the same conditions. As a modification of this process he sometimes melts the metal in a crucible provided with a horizontal division plate, having one or more holes therein, through which holes the metal as it melts flow drop by drop into the bottom part of the crucible. He also makes the crucible with a top or cover, which is bottom part of the crucible. He also makes
the crucible with a top or cover, which is
luted on, and he conducts a pipe from this
cover or other convenient part of the crucible to a pump or extractor, by which a
vacuum is maintained within the crucible
itself. Each successive thin layer of metal
as its melts is thus exposed to the action of
the vacuum, whereby the gases are sucked
away in much the same manner as when the
molten metal is poured through a perforated
block, as above described. In either case
the gas retaining influence of a column of
liquid metal, which produces a hydrostatic
pressure within the body of metal itself, is
neutralized. The mould for the reception
of the molten metal may be placed within
the vessel in which the vacuum is maintained
when that course is convenient, or the metal the vessel in which the vacuum is maintained when that course is convenient, or the metal may be merely cleared of its gases within the exhausted vessel or chamber, and may be conducted thence while still fluid into moulds exposed to the atmosphere in the usual manner. Should the metal be cooled too much the operation of pumping out the gases to retain the necessary fluidity for casting, it may be reheated previous to casting either in vacuo or in the atmosphere by ing either in vacuo or in the atmosphere by the aid of a suitable crucible. As water in the act of freezing expels the air with which it was charged, and as this air, if rapidly expelled, makes the ice opaque, by re of the minute air bubbles entangled i substance, so metals in the act of solidifying tend to expel their gases, and as their solidi-fication is necessarily rapid, a portion of the ncation is necessarily rapid, a portion of the gases is imprisoned, and honeycombing is naturally produced. He aids the operation of expulsion of the gases during the cooling of the molten metal, for as the metal cools the gases, besides being expelled, will be pumped away, and cannot, therefore, be reabsorbed.

Protecting a Foreign Trade-Mark Felix Prot & Co., of Paris, registered their trade-mark in this country in 1873. They detected last December a quantity of spuri-ons goods in the New York market bearing their trade-mark. The members of the firm of C. M. Rich & Co. were brought before United States Commissioner Osborn on the charge of violating the International Trade-mark Act of 1876. They were held to await the action of the grand jury, and were ad-mitted to \$4000 bail each. This is one of the first cases under the recent Act of Congress protecting international trade-

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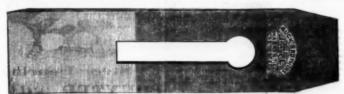
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#### The English Rail Exports.

The London Mining Journal has the fol-lowing upon the British export of rails: Although these are undoubtedly dull times,

it is not unsatisfactory to note that the external demand for our rails has somewhat improved this year. The exports of our steel rails have especially experienced a rather important expansion, showing that the value of this description of rails is more and more appreciated. Even the United States, in spite of the remarkable development of American metallurgical industry since 1870, and in spite, too, of the severe protective tariff imposed by Congress, have been fain to take our steel rails to the extent of 404 tons this year. Russia has been a large purchaser of our steel rails this year, having taken 71,252 tons to Nov. 30, as compared with 62,458 tons in the corresponding period of 1876. Steels rails are much more calculated to resist the severe climate of Russia than iron rails, and that the Russians have come to this conclusion is evidenced by the fact that for every 17 tons of steel rails which we have sent them this year, they took only I ton of iron rails.

The exports have been about the same

extent during each of the two years, but the proportion of iron to steel rails exported has sunk from I in 5 tons to I in 17 tons, and the Russian demand for iron rails would thus appear to be practically disappearing altogether. A somewhat similar result is observable if we institute a similar comparison with regard to the shipment of our rails

The proportions sustained by the iron and steel rails exported has been completely reversed during the last two years, the exports of iron rails having fallen off some 33 per cent., while those of steel rails have expanded nearly threefold.

It is, however, rather curious to notice that iron rails have more than held their own this year in the Australian colonies, although the consumption of steel rails in those dependencies has at the same time also increased.

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Patent-Attorneys, Registration 78/79.Dorotheenstr. of Trade-Marks BERLIN. N.W.

increased.

Present cheapness would appear to be the great point aimed at in the construction of railways in the Australian colonies; at any rate, iron rails are in more request in that quarter than in any other market. We may fairly question whether it is true and real economy in the construction of railways to interest the construction of railways to economy in the construction of railways to aim at cheapness before every other consid-eration, but we must take the world as we find it, Australia included. It must be borne in mind also, that when rails as they have to be imported by the Australians, at a prodigious distance, they cost a good deal, whether they are classed as iron or steel. Hitherto we have dealt only in special illustrations based on the experience of

Hitherto we have dealt only in special illustrations based on the experience of some one country; but if we now proceed to sum matters up from a general standpoint, we are forced to the conclusion that iron rails are being more and more superseded by steel rails. Thus in the 11 months ending Nov. 30, this year, iron rails were exported from this country to the aggregate extent of 165,214 tons, as compared with 182,240 tons in the corresponding period of 1876. On the other hand, 217,426 tons of steel rails were exported from this country to Nov. 30, this year, the corresponding exports in the corresponding period of 1876 coming out at the much smaller total of 161,388 tons. The metallurgical interest of Great Britain has been endeavoring to adapt itself to the altered circumstances of the times, and who can say that in doing so it has not been wise in its great stime. can say that in doing so it has not been wise in its generation?

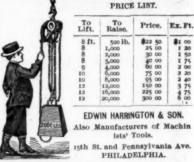
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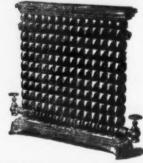
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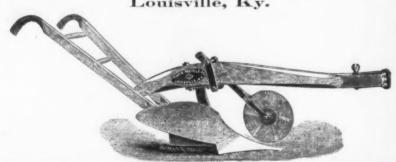


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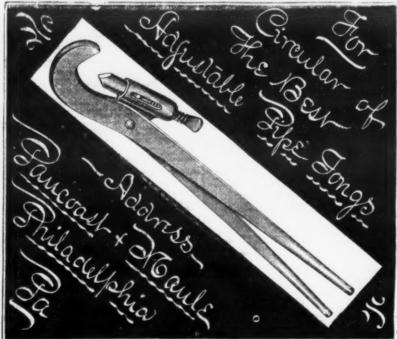
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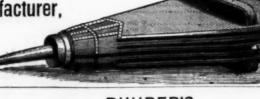
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# Infallible Sewer Gas Trap

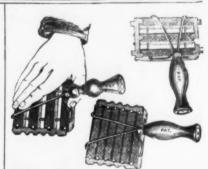
A SURE AND EFFECTIVE SEAL

### Against Sewer Cas.

One of the foremost advantages which this Trap possesses over all others, is that it can be connected with any WATKH-CLOSET, SINE, BATH- UB OF WASH-BASIN, whether o'd or new, and effect an immediate and perfect seal against sewer gas, whether emanating from the sewer or cess-pool. The valve is SELF-ADJUSTING, and opens only far enough to allow the free passage of waste through it—be it small or large—and closes instantly after. Furthermore, no water remains either in the chamber or in the hose, and CANOT HE INJURED OR ITS USE IMPAIRED BY EXPOSURE TO FROST.

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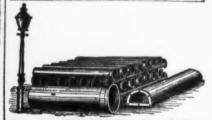
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# TACKLE BLOCKS

P tent Iron Strapped Blocks, ALSO, MANUPACTURERS OF H PECK SLIP, NEW YORK,

# New York Wholesale Prices, March 20, 1878.

HARDWARE.	Loose Pin, Wrt.   dis 40&ro Am, Spiral Spring Butt Co., Japanned   dis 20 Am, Spiral Spring Butt Co., Japanned   dis 20 Am, Spiral Spring Butt Co., Japanned   dis 30 Am, Spiral Spring Hinge   dis 30 Am, Spiral Hinge   dis 30 Am, Spiral Hinge   dis 30 Am, Spiral Hinge   dis 40	National W doz \$4.50, dis 33% % Schofield W doz \$3.50  Elevator Buckets.  MILE Buckets light to to inches (Duc's Improved)	Rolled Plate. dis 6okto 5 Rolled Raised. dis 6okto 5 Wrought Strap and 1, list Dec. 20, 77 dis 6okto 5 Providence Plate   0 to 10 lin. 110 \$\frac{1}{2}\$ b \ dis 40kto \$\frac{1}{2}\$
VIIs. American American B B gold; 10%c over 200 Bu 11C, gold tlagge's Mouse Hole.  \$\text{Superior} \text{Bully gold} \text{ to \$\frac{1}{2}\$ over 200 Bu 11C, gold tlagge's Mouse Hole.  \$\text{Superior} \text{Superior} \te	Sabin Mrg. Co., Double Acting dis 25 Union Spring Hinge Co. dis 25 " Mrg. Co. Spring Hinges dis 25 Blind Butts, Parker dis 70	Schofield. # dor \$3.50  Elevator Buckets. Mill E. Buckets, light, 5 to 10 inches, (Duc's Improved)  # 100 \$23.00 (\$ \$5.00, net  Mill E. Buckets, heavy, 5 to 10 inches (Duc's Improved)    # dor \$5.60 (\$ \$10.20, net	Screw Hook and Stran
Itage's Mouse Hole. gold 10 (6 10 50 cinson's W B gold 11 c e Anvils (American). W B gold 11 c	" Palmer	Emery, Genuine Chester—Regular Nos. \$\beta\$ b.60 \( \) b.6c \( \) dis 1c \( \) Flour and \$\beta\$ \( \) b 6c \( \) dis 1c \( \) Washington Mills—Regular Nos. \$\beta\$ b.6c \( \) b.5c \( \) b.5c \( \) washington Mills—Regular Nos. \$\beta\$ b.6c \( \) b.5c \( \) b.5c \( \) c. refour. \$\beta\$ b.5c \( \) b.5c \( \) b.5c \( \) c. refour. \$\beta\$ b.5c \( \) b.5c \( \) c. refour. \$\beta\$ b.5c \( \) b.5c \( \) c. refour. \$\beta\$ b.5c \( \) c. refour. \$\beta\$ c.5c	Heavy Welded Hook \
lass Mfg. Co	" Lull & Porter dis 65%&10 " Nicholson dis 46&10 " Huffer dis 9&10	Washington Mills—Regular Nos. # 5 8c Flour # 5 5c Wellington Mills, Grain # 5 roc net	Screw Hook and Eye
her (French, Swift & Co)dis 50 @ g	"Garretson dis 70 "Clark's, Nos. 1, 3, 5, 40 and 50 dis 70 Sarkent's, "dis 70 Sarkent's, "dis 708; \$\$10	Hampden Emery Grain	Socket 9 doz 5,75, dis 15 % Riveted Eye 9 doz dis 20 %
on's l'atentdis so& 5 %dis so& 5 %dis so& 5 %dis 45&20 %d	Clark s, Nos. 1, 5, 4, 40 and 40.   dis 70	Enameled and Tinned Ware-   Kettles	Hoes.  Solid Shank, C. S. # doz #\$.25, dis 15 % Socket. # doz 5.75, dis 15 % Riveted Eye. # doz 5.75, dis 15 % Planters'
i Mfg. Co	Beatty's	Tinned Sauce Pans	Planters', Handled dis 35 5 Scovill Pattern, Handled dis 35 5 Hick's Pat. Solid C. S. Planters' dis 20&10 @ 30 8
is' Single Twist Bits. dis 10 % rews Bits. dis 50 % wold's Patent Bits. dis 30 %	Hart Mrg. Co	Escutcheons. Door Lock Same discounts as Door Locks Brass Thread	Hooks. Bird Cage, Sargent's list
ansive Bits, Ctark's, small, \$10; large, \$20 dis 20 %  "Ives	Can Openers. \$\text{\text{\$\pi}} \ \ \text{Messenger's Comet}. \$\text{\$\pi} \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	Faucets. dis $_{5}$ dis $_{5}$ fenn's. dis $_{5}$ dis $_{5}$ fenn's Cork Stops. dis $_{4}$ dis $_{5}$	Cotton (Humason & Beckley Mfg. Co.). dis 25 % Belt. dis 25 %
ow Augers Ives dis 25 % French Swift & Co. dis 40 %	Lyman's. \$\varphi\$ dox \$\varphi_3,75, \text{dis 20}\$ Poole. \$\varphi\$ dox \$\varphi_3,75, \text{dis 20}\$ No. 4, French. \$\varphi\$ dox \$\varphi_2,25, \text{dis 50}\$	Star dis 5,840 ( Frary's Patent Petroleum dis 20,810 ( Wood and Metallic, High list dis 40 %	Bench HOURKISS   \$5.00 \cdot \c
"Bonney's Adjust., \$\forall doz \\$48\to dis 25\&10\%\ Stearns' Adjust., \$\forall doz \\$48\to dis 25\&10\%\ Ives' Expansiveeach \\$4.50\to dis 40\%\	No. 5, Iron Handle	Cork Lined	" McGill's, \$3.00 \( \) dOZ. dis 10 \( \) Skinner's, \$6.25 per dOZ. dis 20 \( \) Clothes Line, Hart's list. dis 60\( \) 60\( \
" Univ'sal Expansive, each \$4.50—dis 20 \$ et Bits	Sardine Scissors	American File Co	Ceiling
OW Augers Ives	Hicks & Goldmark's G. D. & S. R	Brass Thread. dis cozio 3 Wood. dis 2 5 Faucets. dis 5 5 Fenn's Cork Stops dis 5 5 Fenn's Cork Stops dis 5 5 Star. Jenn's Cork Stops dis 5 5 Star. dis 5 5 Felloe Mig. Co. Self-Measuring. dis 5 5 Enterprise Mig. Co. Self-Measuring. dis 2 5 Felloe Plates. The 1 5 Stop to 2 currency, dis 2 5 Arcade. S5.00 to 2 currency, dis 2 5 Arcade. S5.00 to 2 currency, dis 2 5 Arcade. S5.00 to 2 currency, dis 3 5 Hellor & Bros.	Cotton (Humason & Beckley Mfg. Co.)
" Douglass" dis 40&10 %		Madden & Cockayne File Co\$5.00 to & cur., dis 25 %   Jowitt's \$4.50 to & gold J. & Riley Carr 4.60 to & gold \$4.00 to & gold	Tassel (T. & S. Mfg. Co.)
mmedieu's Ship Augers dis 15% ous Ship Augers dis 15%	Ely's E. B	Stubs'	Wire Screw Hooks and Lyes dis 75% of Grass dis 20% to Street Hooks and Lyes dis 20% to Street dis 20%
ng, Brass Ferrule\$3.50 \(\varphi\) gross—dis 35&10 \(\varphi\) at Sewing, Short\$5.00 \(\varphi\) doz—dis 35&10 \(\varphi\)	Cartridges.—Metallic	Moss & Gamble. 45 to £ gold Thos. Turner & Co. Peter A Frasse & Co.) 45 to £ gold Thos. Turner & Co. Peter A Frasse & Co.) 45 to £ gold	Hooks and Eyes—Malleable Iron dis 50&10&10 % Brass
OUS SID Augers.  **Y Haffs.  ng, Brass Ferrule.  ** 3.50 % gross—dis 35&10 %  " dis 35&10 %  ** 150 % dos—dis 35&10 %  ** 10ng.  ** \$1.00 % dos—dis 35&10 %  ** 10ng.  ** \$1.00 % dos—dis 35&10 %  ** 10ng.  *		H. Disston & Sons (new list). dis 35 Limet & Co. (French). \$4.2 to £ gold Boynton's Cant. dis 40 \$	## Brass
Vis, Brud Sets, &c. Sewing, Common P gross \$1.35—dis 25 % Sewing, Best P gross 1.40—dis 10 %	Casters. Bed dis 55	" 6 " " 2.50 each net	Nos. 5 0 7 8 9 10
Patent Peg. Pgross 60—dis 15% Shouldered Brad Pgross \$2,70—dis 25&10 % Handled Brad \$80.0 % gross—dis 25&10 %	Den Socket dis 40:  Cattle Leaders dis 10% 10% 10% 10% 10% 10% 10% 10% 10% 10%	8	Nos. 5 6 7 8 9 10  Cortland 290 200 240 290 220 210 dis 15  " P't'd & Blued 310 280 200 240 230 260 26 25 5  Globe (New list). Nos. 5 6 7 8 9 10
vis, Brad Sets, d.c.  Sewing, Common.   \$\tilde{\pi}\$ gross \$1.35-\dls 25 \$  Sewing, Best.   \$\tilde{\pi}\$ gross \$1.35-\dls 25 \$  Sewing, Best.   \$\tilde{\pi}\$ gross \$2.25-\dls 15 \$  Fatent Peg.   \$\tilde{\pi}\$ gross \$2.25-\dls 15 \$  Fatent Peg.   \$\tilde{\pi}\$ gross \$2.75-\dls 15 \$  Shouldered Brad.   \$\tilde{\pi}\$ gross \$2.75-\dls 25 \$250 \$  Handled Brad.   \$\tilde{\pi}\$ 500 gross-\dls 35 \$250 \$  Handled Scratoh.   \$\tilde{\pi}\$ 1.00 gross-\dls 35 \$250 \$  Socket Scratch.   \$\tilde{\pi}\$ 1.00 gross-\dls 35 \$250 \$  Sets, Alken.   \$\tilde{\pi}\$ 0.4, \$\tilde{\pi}\$ 1.00\dls 25 \$  \$\tilde{\pi}\$ 1.00 gross-\dls 35 \$250 \$  \$\tilde{\pi}\$ 1.00 gross-\dls 35 \$  \$\tilde{\pi}\$ 1.00 gross-\dls 35 \$250 \$  \$\tilde{\pi}\$ 1.00 gross-\dls	" Iron, Steel Points	miproved Knox (Climax), 4-luch	North Western Fini'h'd 20 43 21 20 10 18c net " Plain 25 22 20 19 18 17c net National Pointed and
No. 42, \$10.50; No. 43, \$12.50	Chain.  Trace, 04-1,-2 by the cask, \$\pi\$ pair, gold, 45 @ 46  "64-10-3 by the cask, \$\pi\$ pair. gold, 43 @ 44	Europre	Plain   25   22   20   19   18   170   104     National. Pointed and   Polished, Pat. Fin   25   23   22   21   200   net     Putnam Hammer, P't'd 2   23   21   20   19   180   net     Vulcam P't'd & Blued.   26   23   21   20   19   180   net
les. mon (Guy C. Hotchkiss, Field & Co.)? B 4c Collar, Case Hardened, Chilled Box? B 7/4c tle Grense.—Frazer's	German Halter Chain. dis 30&5 % gold 30 % of Coll dis 30&5 % gold dis 30&5 % g	Crown, 4/c-in, Roll, 82,20;6-in., 82,63;8-in., 82,80each, net	Horse Shees.—Burden. ** keg \$4.02\{2} R. I. Horse Shoe Co., Perkins' Improved Light, Medium and Heavy. ** keg \$4.02\{2} Mule Shoes. ** keg \$0.02\{2}
lances. light or "Common" dis 25&to 5 ther Spring Balances dis 25 5 Keys.—Gray's Ratchet ∦ doz \$4.co, dis 15 ≤	Chais.  Trace, 84-1-2. by the cask, \$\pi\$ pair, gold, 45 @ 46    Trace, 84-1-2. by the cask, \$\pi\$ pair, gold, 46 @ 46    " -10-2. by the cask, \$\pi\$ pair, gold, 49 @ 50    Gorman Hatter Chain. dis 50\$ \$\frac{5}{2}\$ gold    " Otl. dis 50\$ \$\frac{5}{2}\$ \$\frac{5}{2}\$ \$\frac{1}{2}\$ \$	Boynton's Cant.	Cortland  "Pt'd & Blued. 31c 38c 38c 32c 32c 32c 31c d ds 15  "Pt'd & Blued. 31c 38c 38c 38c 32c 34c 32c d & 25 5  Globe (New list). \ Nos. 5
Light Brassdis. 73 %	Red P gross 750 ne	"Empire"	l ce A wis, Chiseis, &c. American lec Chisei. # doz \$6.50 net National Novelty Ice Breakers. # doz \$6.50 net White's Stiding Head Picks. # doz \$0.50 net
	White Crayons.  Chisets.  O. R. Barton Tool Co. (all kinds).  O. Barton Tool Co. (all kinds).  O. R. Barton Tool Co. (dis 66&to. dis 6	Reystone Portable Forge Co.	White's Stiding Head Picks. W doz \$2.50 dis 20 % Dunlap's Ring Picks. U doz 3.00, dis 20 % Wood Head Picks Sayount's Mod According to the Sayount Mod According to the Sayount's Mod According to the Sayount's Mod According to the Sayount Mod According to the Sayo
SW188. Globe (Cone's Patent). dis 25&10 % Abbe's. dis 26&10 % Globe (Cone's Patent).	Socket Framing, Crossman. dis 6-8210 Buck Bros. new list, dis 25 Hart Mig. Co. dis 65&3&1082	Reed & Bartondis 40&5 % Fruit and Jelly Presses. Enterprise Mg. Codis 20 %	Iron "Head Pickin Head. " doz 1.55, dis 60c 10 %  Ice Mallets, Pickin Head. " doz 2.75 net  "Pick in Handle # doz 2.00 net
Barton's dia 4062 % k, Taylor's dis 25 £10 % Grock's dis 25 %	" Merrill dis Solito " Witherby Tool Co. dis Solito Douglass' dis 70	Fry Pans. Burnished, P. S. & W., new list	" Pick in Handle # doz 3/5 net " Pick in Handle # doz 3/5 net Ice Axes, Small Cast or Malleable # doz 1.50 net Kitchen Ice Tongs # doz 2.25 net  17 ettles.
Cone's dis 50 % Connel's dis 50 % connel's dis 60 % ro % r	" Firmers, Crossman	Burnished, P. S. & W., new list. dis 60 %  NO 0 2 3 4 5 7 6 7 9 400 8.79 4.75 4.75 5.75 6.00 7.00 8.00 9.00  Chures. dis 45&10 \$ 5 7 4.75 4.75 4.75 6.00 7.00 8.00 9.00  Chures. dis 45&10 \$ 6 7 4 7 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9	Brass, 7 to 13 inches inclusive? 5 55 net Brass, larger than 13 inches
Taylor's Bronze or Plated Lever	" Witherby Tool Co. dis Cockio	" Star	K nives. dis 20 %
Brook's dis 50 % Western dis 25 % O %	Tanged Firmers extrs\$5.00 \$5.25 to £ gold	"Smith's Patent	" Shoe dis 15 % Bread doz \$1.50, dis 15 % Hay and Straw—"Wadsworth's" dis 30 \$ Table and Pocket. See Cutlery
Common Wrought dis 202 10 5 Western dis 202 10 5 6 6 7 5	" Spear & Jackson's 5.00 to £ gold " Buck Bros (Shank) 5.00 to £ gold	"Eureka Gimlets	Knobs.   See
Kentucky "Star" dis 2022 5	Iron, Providence Tool Co.'s, Wrt. Iron	Douglass' dis 40210 5	Elastic End. No. 8
Come's dis 50% comoel's dis 50% to 5 Connel's dis 50% to 5 Taylor's Bronze or Plated Lever dis 50% to 5 Taylor's Bronze or Plated Lever dis 50% to 5 Hart, Bliven & Meed Mig. Co dis 50% to 62% dis 50% dis 50% to 62% dis 50% d	Clamps. Iron, Providence Tool Co.'s, Wrt. Iron	Douglass   dis 40% to \$   Glue Pots   Clue Pots     Tinned and Enameled   dis 40 \$   Family Howe's "Eureka"   dis 52 \$   Grindstone Fixures   dis 70% to 7	"Elastic End. No. 8
Tavas	"Cabinet, Sargent'sdis coatocto "Carriage Makers', Sargent'sdis coatocto "Cord and Tape (T. & S. Mfg. Co.)dis 30	Sargent's Patent	Picture (T. & S. Mfg. Co.)
dis 25 % diders' dis 25 % die 25 % die 25 % die 26 % die			Indies.
ind Adjusters.—Domestic 4 doz \$3.00, dis 20 \$ ind Fasteners.—Mackrell's	Cockys	Hammonds' (new list) on A. E. Bell Face). dis 15 % Hammonds' (new list). dis 15 % Hammonds' (new list). dis 15 % Hummon & Beck ley Mig. Co. dis 23 % % Chency's Steel Face and Claw dis 10 % of all Steel. dis 20 % Magnetic Tack. dis 20 % Magnetic Tack. dis 20 % Magnetic Tack. dis 10 % Magnetic Tack. dis 20 % Magnetic T	Reading   1815210 %   Monroe's Patent   19 dos \$4.00, dis 20 %   Lanterns.   Tubular   No. 0, \$10.00; No. 1, \$12.50   net   With Guards, see extra.
hburn's Patent. # gross, \$16.50, the \$40.70 hburn's Patent. # gross \$1,00, dis 30 % iman's. new list net	Lever Bibbs	Cheney's Steel Face and Claw	Lanterns
dman's Patent, % in and larger # 3 41c. dis 10&5%	Board and Box	Magnetic Tack dis 25&10 \$ Warner & Noble's dis 10 \$ Hand Cuffs and Leg Irons.	Brady's Patent dis 10&10 % Etna dis 10&10 % Yankee dis 10&10 %
ocks.—Burr & Co	American (Enterprise Mfg. Co.)	Frovidence Tool Co. s hand cums, \$15.00 \( \pi \) dis 10 \( \frac{1}{5} \) Tower's	PoliceSmall. \$7.50; Med., \$9.00; Large, \$12.00, dis 15@20%
le, Rope and Iron Strapped (The Penfield W). dis 40 % ley Rule and Level Co. dis 231/26.10 %	Compasses dis 3620 Callipers dis 3620	Handles, Door or Thumb Latches— Nos	Yankee
aver». dis 20 %  tins. Barrel, Shutter, &c. dis 65&10 \$  Fron Chain (Sargent's list). dis 65&10 \$  Fron Chain (Sargent's list). dis 65&10 \$  's Lever Boits. dis 40, 10&10 \$  g Butts (Humason & Beckley Mfg. Co.) dis 40&10 \$  ught fron Barrel. dis 50, 10&10 \$  di	Bennis & Call Co.'s Compasses and Dividersdis 35&10 Cook's	Roggin's Latches	Eureka, Tinned. # doz \$10,00, dis 10 % Dunlap's Improved. # doz \$4.00 net Sammis' Patent. No. 1. 87.50: No. 2. \$22.00 #
Iron Barret, Shutter, &c	Miller's Patent dis 25 Coopers' Tools. Rradiev's dis 15 @ 20	no Plate, 74c. net Barn Door. per doz 🛼 co, dis 65& 10& 10 Wrought Chest dis 60% 10 %	doz. dis 25&10 % Lines.—Linen Fish dis 25 % Cotton Chalk dis 50 % Sil Lake Chalk Nos o 1 2 2 8600 86 50 870 %
ught iron Barrel	Chas, E. Little       dis 20 @ 25         D. R. Barton Tool Co.       dis 20         Corkscrews.—Humason & B.       dis 33/5	Surface Chest, Sargent's list. dis 60&10&10 % Flush Chest dis 60&10 % Lifting dis 60&10 %	Sil. Lake Chalk       Nos. 0, 1, 2, 3, \$6.00, \$6.50, \$7.00, \$7.00         \$7.00       dis 20 %         Mason's Linen       dis 20 %         Wire Clothes, Gai d       each 36 @ 43c net
" (Survent's new list).dis 50, 10&10 % " Sunk Flush, Sargent'sdis 50&10&10 % " Stanley'sdis 16&10 %	Corn Knives and Cutters.—Bradley'sdis to Crow Burs. Cast Steel	Saw and Plane   dis 95&10	Wire Clothes, Gal d
"B.K.Flush, Comm'n, Stanley's.dis 30&10 % "Ex. Heavy, dis 20&10 % "Plated Knob & Slide Flush "dis 10% 10 %	Crucibles.—Gautier & Co	Hammer and Hatchet	Jabinet—Gaylord       dis 25&2 %         Eagle       dis 25 %         "Barnes & Delts       dis 20 %         Bridgeport Lock Co       dis 25 %
inge and Tire, Common	6, % in. 1.80, 2.00, 2.40 Curling Tongs P doz \$6.50, dis 15 Pinching Irons P doz 7.50, dis 20	Apple " assorted, " Goo	Trunk dis 25 % Langstroth & Crane's List Jan. 1, '77. Round Key dis 40&10 %
Coleman	Curry Comb Mfg. Co	Socket " assorted, " 4.50 dis 40 % File assorted, " 7.00	Flat Key dis 33% 10 % Barnes & Deits, Flat Key dis 30 % Yale Lock Co., Flat Key dis 40 %
"Bay State" dis 70&10 %  "Bay State" dis 70&15 %  (Phila). dis 60&10@t0&20 %  IN NUL COMMANY	Solvay of Best. dis 26 Cockeyes	Handles.  Door or Thumb Latches— Nos	" Eagle. ( dis 352 % % % % % % % % % % % % % % % % % % %
e—American Screw Co.'s	White Enameldis 15 Cutlery. Meriden Cutlery Co. (Table)ne	Douglass'* # set \$1.25, dls 10 % Swan's # set \$1, dis 20&10 %	Branford dia foktok2 % Norwalk dia soktok2 %
dis 50 %   dis 60 & 10 %   dis 60	White Enamel	Hangers.   # set \$1, dis 20210 \( \)	Norwish
ag Eutte (Humason & Beckley Mfg. Co.) dit socktof ageht Iron Harrel dif 50, toktof Sulare dif 50, toktof Sulare.	Table)	Sterling Improved (Anti-Friction)	Plate dis 33/36/28/36  Branford dis 60&10&2.5  Norwalk dis 60&10&2.5  Norwalk dis 50&10&2.5  Norwalk dis 50&10&2.5  Norwalk dis 50&10&2.5  Norwalk dis 50&10&2.5  Russell & Frwin dis 60&10&2.5  Mallory, Wheeler & Co. dis 33&10&2.5  Mallory, Wheeler & Co. and 2 % for cash dis 20.5  Mallory, Wheeler & Co. and 2 % for cash dis 20.5  Mallory, Wheeler & Co. dis 33/5 %  Romer's dis 20.5  New York Lock Co. dis 20.5  New York Lock Co. dis 20.5  Miller & Barnes & Diets dis 20.5  Miller & Patent dis 30.5  Mallers & Hickory and Lignumvitze dis 20.5  Maller
quality, no Augers\$5.50  ### 11.00 dis 40&10 %  nd quality, no Augers 2.35  net	Dippers.	Stering improved (Anti-Friction)	44 Romer's
l's, no Augers 4-75 6.25 dis 25 %	Rimmed   \$4 dos 3.75, dis 20	Andrews' dis 50 % Sargent's dis 60&10 % New York Wire dis 20%	J. H. McWilliams
n Nut Co	Door Springs. Torrey's Rod	"German" dis 60 %  I flatchets.  I main Blood	Penn Lock Works
ent & Co.'s	Compered	"German".  I flitchets.  Islaiah Blood  Shingling, Nos. 1 2 3.	** (Scandinavian)dis 50 %  **MailetsHickory and Lignumvitedis 10 % 10 %  **Meat Cutters.**  **Dixon's (P. S. & w dos. \$1.00 1,000 19,0030,00-dis 25 %  **Miles' Challenge
on sife. Co	Johnson's Rod Gom (Coll)—  No. 1, Large, Japanned	Hunt's. dis 25 % Shingling, Nos. 1 2 3 \(\psi\) dos \(\psi\).25 \(\psi\).8.00 \(\psi\).7.75 \(\psi\).8.00 \(\psi\).7.75 \(\psi\).8.00 \(\psi\).7.75 \(\psi\).8.00 \(\psi\).7.75 \(\psi\).8.00 \(\psi\).7.75 \(\psi\).8.00 \(\psi\).7.75	Miles' ChallengeNos. 1 2 3 \$\tilde{\text{P}}\ \text{dos} \frac{\text{\$\frac{2}{2}}.00}{\text{30.00}}   \text{40.00-dis 32 %}  \text{Perry's Nos. 1 2 3 4 4 6'rd 5 g'rd}
mor Ball (American)	Japanned	Lathing, Nos. 1 2 3	## Modruff's (P. S. & W.)NOs. 100 15.00 18.00—dis 20&10 \$  Woodruff's (P. S. & W.)NOs. 100 15.00—dis 20&10 \$  Wolco
right Wire Goods dis 33% \$ 11 Rings.—Union Nut Co. dis 50820 \$	Nickeled	Claw, Nos. 1 2 3 # dos a.co a.co 10.co Lathing, Nos. 1 2 3 # dos a.co 8.co 9.co Simmon's	W dos. \$33.00 40.00 51.00—dis 50\$2 \$  Draw CutNos. 5 2 6 8 10
hkiss low list dis 10 % low list dis 10 % low Nut Co. dis 60 %	Star (Coil)—For Cop'd, Nickel-Plated, &c., see list. No. 5, Small	Shingling, Nos. o 1 2 5 % doz \$7,50 \$8.00 \$8,50 \$0,50 \$Claw, Nos. 1 2 5 % doz \$7,50 \$8.00 \$8,50 \$0,50 \$Claw, Nos. 1 2 5 % doz \$8,50 \$8,50 \$0,50 \$Erond, Nos. 1 2 5 % doz \$8,50 \$1,50	Each \$5.00 7.00 10.00 25.00 50.00 60.00
IN NUT CO. dis Society States of the 15 to	No. 7, Large dos 3.50) Philadelphia	Broad, Nos. 1234 \$\psi\$ dos 16.00 12.00 14.00	Moinsses Gates. Stebbins Patterndis 6256&10 %
Joint, Narrow	Star (Coil)—For Cop'd, Nickel-Plated, &c., see list. No. 5, Small	Shinging, NOS. 12 3 4 dos 6.50 7.00 7.50  Claw Nos. 12 3 4 dos 6.50 7.00 7.50  Lathing, Nos. 12 3 4 dos 6.00 6.50 7.00  D. R. Barton Tool Co dis 20 %	" Genuine
Form Broad dis 64k105  E John Narrow and Broad dis 70k105  E John Butts dis 64k105  Er's Hinges dis 70k105  DRILLED AND WIRED.		Shingling, Nos. 12 3	Mortars and Pestles. net Mortising Machines each \$20.00, dis 20 %
Joint, Narrowdis 50\$10 \$ Broaddis 50\$10 \$		J. P. Verree & Co. Shingling, Nos. 1 2 3	NailsSee Trade Report
DELLED AND WINED.  Joint, Narrow dis soltio 5 Broad dis soltio 5 Broad, Japanned dis soltio 5 Broad, Japanned dis 65-82 to 5 Japanned dis 65-82 to 5 with Acorns dis 65-82 to 5	Witherby Tool Co	Lathing, Nos. 1 2 3 \$\psi \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	Natis and Washers. Square and Byxagon
with Acorns. dis 64210 \$ liament Butts. dis 66210 \$ er's Hinges. dis 65410 \$	Blacksmiths'	Claw, Nos. 1 2 3 # dos 7.75 8.50 9.25 Lathing, Nos. 1 2 3 # dos 12.00 11.00 13.00 M. H. Jones & Co	Nut Crackers Table (Humason & Beckley Mfg. Co.). dis 33½ % Blake's Pattern. # doz \$2.35, dis 10 %
Sament Butts   Gis Course	Drills and Drill Stocks.   Blacksmiths'	Haif Hatcheta, Nos. 1 2 3.    # dos 1.00   10.50   10.00     J. P. Verree & Co.	Onkum.  Bost.
	" Ingersoll's (old list)dis 35	Broad, Nos. 2 5 4 9 dos 10.00 15.00 14.50 Nos. 5 6 7	Zine and Tindis 45 %
con Finian, Plain. dis scaro 5  " with Iron Acorns. dis 752 to 5  " with Silvered Acorns. dis 552 to 5  " with Silvered Acorns. dis 552 to 5	Moore's Triple Actiondis 20 @ 25	Hay Knives.  "Lightning".  Wadsworth's.  Hinges.	Brass and Copper dis 40 5 Colmsted's dis 40 5 Colmsted's dis 40 5 Broughton's dis 40 5 Broughton's dis 40 5 Majicable (Hammer's) dos 40 5 Code dis 10 5 Co S Balls dis 60 5 Faber's Carpenters' dis 10 5 Faber's Carpenters' dis 10 5 Erose 8 5.x5 net Dixon's Lead dis 10 5 Erose 8 5.x5 net Plukius Bress W dos \$2.75 dis 70 5
WIED SHIVE PED ACCOUNTS OF SAME OF SAM	Automatic Boring Toolseach \$2.75, dis 20 Orill Chucks.—Danburyeach \$8.00,dis 30 Morse's Beach Patentdis 30		Ox Balls dis 60&10 \$ Pencils Faber's Carpenters' dis 10 \$
Joint. Broad disaokto x	Adjustable	N. Y. State	" Round Gilt # gross \$5.25 net

in Saltran II	
is foctio % is foctio % focti2½ %	Picture Nails and Knobs. Brass Head, Sargent's List
ls 40&10 % is 40&10 %	" T. & S. Mfg. Co
dis 30 %	Crown Platting machines
5, dis 25 %	Second " dis \$5\&10\square\text{dis \$5\&10\square\text{g}}\$  Bailey's Patent Adjustable, new list Jan. '77, dis 25\&10\square\text{g}\$  Bailey's "Victor" dis 25\&10\square\text{g}\$
dia so s	D. R. Barton Tool Co. dls 20 g Bendusky dls 35 g Ohio Tool Co. ds 35 g
35 @ 40 % 25 @ 30 % dis 35 % dis 35 %	Plane Irons, Butcher's
dis 35 % dis 35 % dis 35 % dis 35 %	Defiance dis 250 to 6 D. R. Barton Tool Co. dis 20 Middletown Tool Co. dis 20 dis 20 Middletown Tool Co. dis 10
&1c&10 % dis 50 % dis 25 %	Defiance Adjustable, new list
dis 50 % dis 25 % dis 70 % dis 10 % z dis 25 %	Button's Patent dis 23\( \) \( \) \( \) dis 23\( \) \( \) Hull's Patent Nippers, No. 1, \( \) 15; No. 2, \( \) 21 \( \) doz, dis 25\( \) Humason & Beckley Mfg. Co
085810 %	Eureka Piters and Nippers. dis 25 % Russell's Parallel. dis 25 % Russell's Parallel. dis 25 % Office of the Control of the Con
8 70&10 % 8 70&10 % 8 45&10 % 5&5&10 %	Plumbs and Levels. Disston's
8 45&10 %	Chapin's. dis 60&10 % Standard Rule Co.'s New Adjustable. dis 60&10 % Non-Adjustable. dis 60&10 % Tolyacon's Peters of the Co.'s Non-Adjustable. dis 60&10 % Tolyacon's Peters of the Co.'s Non-Adjustable.
dis 40 % dis 75 % dis 40 % 8 75&10 %	Post Hole and Tree Augers.
8 30&10 % 8 40@45 % &10&10 % &10&10 %	Samson Post Hole Diggerper doz \$30.00, dis 20 % Fletcher Post Hole Augers? doz 30,00, dis 20 % Vaughan's Post Hole—6 in. \$23,00; 7, 8 and 9 in. \$25 per dozdis 20 %
10 220)	Leed's \$5.00 each, dis 35 % Pointie Parers, &cc. \$5.00 each, dis 35 % Bay State. \$0.00 \$12.00 not
23e	"Ohlo Tool Co. dis 10 % "Spear & Jackson's. \$5.00 to £ gold "Spear & Jackson's. \$5.00 to £ gold Pilers and Nippers. Button's Patent. dis 3345 % Hull's Patent Xippers, No. 1, \$15; No. 2, \$21 \( \pi \) dos, dis 25 % Humason & Beckley Mig. Co. dis 3345 % Humason & Beckley Mig. Co. dis 3345 % Eureka Pilers and Nippers. dis 308 70 % Eureka Pilers and Nippers. dis 308 70 % Humbs and Levels. dis 25 % Pilumbs and Levels. dis 608 70 % Pilumbs and Levels. dis 608 70 % Stanley R. & L. Co.'s Pat. Adjustable. dis 608 70 % Standard Rule Co.'s New Adjustable. dis 608 70 % Standard Rule Co.'s New Adjustable. dis 608 70 % Johnson's Patent. dis 608 70 % Johnson's Patent Adjustable. dis 608 70 % Pocket Levels. dis 608 70 % Samson Post Hole Digger Augers. Samson Post Hole Digger Augers. Samson Post Hole Digger Augers. \$4 doz \$6.00, dis 20 % Fletcher Post Hole Augers. \$5.00 each, dis 25 % Yaughan's Post Hole— 6 in. \$2,50 r. 7, 8 and 9 in. \$5 per doz. dis 20 % Yaughan's Post Hole— 6 in. \$2,50 r. 7, 8 and 9 in. \$5 per doz. dis 20 % Yaughan's Post Hole— 8 and 10 million of the post
dis 15 0 3 @ 25 %	Pulleys.  Judd's Axle
10 18c net 18c net 17c net	Jap'd Screw         dis 669 & 10 %           Brass Screw         dis 60% to %           Jap'd Side         dis 60% to %           4 Cleber Time         dis 60% & 10 %
200 net 180 net 180 net 180 net	" Pruning Hook " 11.50, dis 20 % Pulleys, Judd's Axle. \$\pi\$ doz \$0.50, dis 20.810 \$\forall \text{Hot House and Tackie}\$. \$\pi\$ dos \$0.50, dis 20.810 \$\forall \text{Hot House and Tackie}\$. \$\displays \text{dis 6054.820 }\text{Sprass Screw}\$. \$\displays \text{dis 6054.820 }\text{dis 6054.820 }\te
eg 4.02\6 eg 5.02\6 eg 5.02\6 eg 5.02\6	Sersew, Swing and Slide (T. & S. Mfg. Co)   dis 29/4 %
	Punches. dis Punches. Delt or Drive. Delt or Drive. Delt or Drive. P doz \$2.00; 2.25; 2.50, dis 30 \$
\$6.50 net , dis 10 % \$6.50 net dis 20 % o, dis 20 % 8 50&10 %	" Leach's Patent
\$ 000010 %	Rail. Sliding Door, Wrought Brass? h 4cc dis 10 % Iron, Painted? foot oc, dis 55&10 % Barn Door, 14 54 and 34 inch
3.00 net 1.50 net 2.25 net	Raif. Wrought Brass. ** ** ** ** ** ** ** ** ** ** ** ** **
40c net	Tor N. E. Hangers   dis 70&10 \$
.dis 20 % .dis 15 % , dis 15 %	\$3.60 4.00 4.40  Razor Straps.  Genuine Emerson. dis 20 %  Badger's Emerson. dis 20 %
Cutlery	Badger's (not Emerson).       dis 25 %         Evans       dis 40 %         Imitation Emerson       ₽ dos \$2.75, dis 40 %         Hunter       Discount of the control of the c
30&10 % dis 10 % 60&10 %	Badger's Emerson   dis 20     Badger's Emerson   dis 20     Badger's (not Emerson)   dis 25     Evans   dis 40     Initiation Emerson   dos 2,75, dis 40     Initiation Emerson   dos 2,75, dis 40     Initiation Emerson
r Locks.	Saunder's   dis to 6 15 \$   Kivets   Five Inch and Tinned   dis 40 \$   In bulk, new itst of Jan. 10, 1876   dis 40 \$   In bulk, new itst of Jan. 10, 1876   dis 30 \$   Copper Rivets and Burs   dis 10 \$   Nos. 7 8 9 10 11 12 13 14 15   Rivet Sees   520 540 560 690 690 700   Rivet Sees   dis 30 \$   Rods   dis
dis 10 % .dis 20 % .dis 50 %	Nos. 7 8 9 10 11 12 13 14 15 18 18 18 19 19 19 19 19 19 19 19 19 19 19 19 19
8 55&10 % 8 50&10 % 8 15&10 % dis 20 %	Stairdis 50 %
.50 } net .dis 25 %	Rollers. Barn Door, Sargent's list. dis 70& & 10 5 Novetty. dis 10 4 Acme (Anti-Friction). dis 5 5 Manufacturers' List, Jan. 2, 1878 Manifa. fine and larger # B 12/58
% OF 3001	Rope. Manufacturers' List, Jan. 2, 1878
B TORETO % I	manita
8 10&10 % 8 10&10 % 8 15@20 %	
dis 20 %	### ### ### ### ### ### ### ### ### ##
dis 20 % dis 70 %	Manual
dis 20 % dis 10 % dis 10 % dis 10 % dis 25 % dis 25 % dis 25 %	Tard Rope   Mand 5-16 inch \( \psi \) h 13\( \psi \)     Hay Rope   Mand 5-16 inch \( \psi \) h 13\( \psi \)     Hay Rope   Mand 5-16 inch \( \psi \) h 13\( \psi \)     Hay Rope   Mand 5-16 inch \( \psi \) h 13\( \psi \)     May Rope   Mand 5-16 inch \( \psi \) h 11\( \psi \)     Hay Rope   Mand 5-16 inch \( \psi \) h 11\( \psi \)     Hay Rope   Mand 5-16 inch \( \psi \) h 11\( \psi \)     Rules   Boxwood   Ivory     Chapin's   dis 60\( \psi \) 15\( \psi \)     Stanley   dis 60\( \psi \) 15\( \psi \)     Standard   dis 60\( \psi \) 15\( \psi \)     Stephens   dis 60\( \psi \) 15\( \psi \)
\$ 10£10 % \$ 15£30 % \$ 15£30 % \$ .dis 20 % \$ .dis 20 % \$ .4.00 net \$ .4.00 net \$ .4.00 net \$ .4.00 set \$ .7.60 % \$ .4.00 % \$ .4	Tard Rope   Mand 5-16 inch \( \psi \) h 13\( \psi \)     Hay Rope   Mand 5-16 inch \( \psi \) h 13\( \psi \)     Hay Rope   Mand 5-16 inch \( \psi \) h 13\( \psi \)     Hay Rope   Mand 5-16 inch \( \psi \) h 13\( \psi \)     May Rope   Mand 5-16 inch \( \psi \) h 11\( \psi \)     Hay Rope   Mand 5-16 inch \( \psi \) h 11\( \psi \)     Hay Rope   Mand 5-16 inch \( \psi \) h 11\( \psi \)     Rules   Boxwood   Ivory     Chapin's   dis 60\( \psi \) 15\( \psi \)     Stanley   dis 60\( \psi \) 15\( \psi \)     Standard   dis 60\( \psi \) 15\( \psi \)     Stephens   dis 60\( \psi \) 15\( \psi \)
# 10 # 10 # 15 # 15 # 20 # 15 # 20 # 15 # 15 # 15 # 15 # 15 # 15 # 15 # 1	Tar'd Rope
10k10   5   15   6   6   6   6   6   6   6   6   6	Tar'd Rope
10 to 5	Tard Hops
# 10&10 % # 15@20 % dis 20 % d	Tar'd Rope
s tokto 5 s tokt	Tar'd Rope
s rokro 5 s rokro 5 dis 20 5 dis 20 5 dis 10 5 \$4.00 net t dis 10 5 \$4.00 net t dis 25 5 dis 25 5 0.01 20 5 10 25 8 10 25 8 1	Tar'd Rope
# 10 to 2 to 3 to 3 to 4 to 5	Tar'd Rope
# 10 to 2 to 3	Tar'd Rope
s rokto 5 s rokt	Tar'd Rope
10	Tar'd Rope
# 10 # 10 7 # 15 # 10 # 10 # 10 # 10 # 10 # 10 # 10	Tar'd Rope
# 10 # 10 7 # 15 # 10 # 10 # 15 # 15 # 15 # 15 # 15	Tar'd Rope
# 10 # 10 # 10 # 10 # 10 # 10 # 10 # 10	Tar'd Rope
# 10 to 2 to 3	Tar'd Rops
# 10 # 10 7 # 15 # 10 # 10 # 10 # 10 # 10 # 10 # 10	Tar'd Rope   % and 5-16 inch % in 13/60   % inch and larger % in it combined from the state of t
# 10 min of section of	Tar'd Rope
s tokto 5 s tokt	Tar'd Rope
s rokros s styling s so s	Tar'd Rope
s rokto 5 s 156205 dis 20 5 di	Tar'd Rope
s rokto 5 s s rokto 5 s ro	Tar'd Rope
s rokros s styling s so s	Tard Rope

March 21, 1878.	·	HEIRON
Foot. dis 60&10 %	WashersSee Nuts and Washers.	No.24
Foot	Weather Strips.	No.35 49 No.36 45 No.37 45
Hart, Bliven & Mead, new listdis 44&10 \$ Douglass Mfg. Co	Wire. Brass and Copper List of Jan. 1, 1878 dis 10 %	No.30
" Providence Tool Co	Nos. 19 @ 26, dis 60 @ 62½ \$  Nos. 27 @ 36, dis 62½ @ 63 \$	No.31
Sargent & Co.'s	Galvanized, Nos. o to 6	
Round Head Brass, list Sept. 1, 75	Tinned, Nos. c to 18	Spring Wire 20 # B advance. Flat, Square and Haif Round Wire 9 on Round Wire. Fancy Wire not less than 100 # B adv
Sargent & Co.'s.   dis 60&10   Serews.	Anneated Fence, 7.04.5 and 9	
Lag or Common Coach	Nos. 10 and 11# h 9%c No. 12# h 10c Fence Staples	Brass Rods, No. 8 and smaller not lengths, 4cc. Wire straightened and cut, smaller not less than 2 feet lengths, 4cc. Wire and Rods less than 2 feet length Twelve cents per B extra for spoolin MISCELLARKOUS. Common Plain Brass Pall Ears. Brass Door Rail. SCRAP. High Brass Scrap Low Gilding. Turnings, Filtings and Chips half the p Terms—Not cash. Interest to be addays.
Machine, Flat Head, Iron, Am. Serew Codis 25 % Round Head, Iron, G. dis 20 % Bench, Iron, dis 542 75	"Staples, Gaivanized	Twelve cents per & extra for spoolin  MESCELLANEOUS.  Common Plain Brass Pail Ears.
Wood, Beach	Galvanized " B stoc Stock Music Wire, Nos. 12 to 27. F B \$1.00. net Indd's Picture Wire	Brass Door Rail
Hand Rail, Sargent'sdis 60&10 % "Humason, Beckley & Co.'sdis 40&10 % Lock Bell Rotton	Clothes Line Wire. Galvanised w coil \$6 \$430 net Wire Cloth. Clinton, green or drab, by the rollper sq. ft. 340 net	Low Gilding.
Sash (T. & S. Mfg. Co.)	Wrenches, American Adjustabledis 45 %	Terms—Net eash. Interest to be add
" Cast, " " " doz 11.00 dis \$1.40	Diagonal, dis 20 %	Plain to No. 20 inclusive, above 1/4 in. to above 3 in.
Jack	Wire Cloths.  O'Coon, groon or drab, by the rollper sq. ft. 3½c net  O'Coon, groon or drab, by the rollper sq. ft. 3½c net  American Adjustable	daya.  Plain to No. ze inclusive, above ¼ in. t  above 3 in.  Nos. 21, 22, 23, two cents advance on I.  Number.  Nos. 24, 25, 25, four cents advance on I.  Number.  Above No. 26, special rates.  Plain, ¼ inch.  " " " " " " " " " " " " " " " " " " "
Wadsworth's Grass.	Hull & Beiden's "Climax"dis 25 % Knight's Patentdis 25 %	Number. Above No. 26, special rates. Plain, ¼ inch.
Scythe Snaths. dis 20 % Shears and Scissors.	Lindsay's dis 25 % Taît's Patterndis 75&10 % Davis' Patent Duplexnew list, dis 25 %	All Mandrel Drawn Tubes, 5 cents adv
American"dis 45% 5 Cast Steel	Bemis & Call's Patent Combination	Prices. Fancy Tubing to No. 20. English, Scotch and Extra Patterns F to No. 20. Tubing Sawed or Cut 2 to 4 feet long
Seymour's Straight Trimmersdis 65 % Scissors	" Cylinder or Gas Pipe	Tubing Sawed or Cut 2 to 4 feet long vance on List.
Barnard's Lamp Trimmers	Universal, Cog Wheels, No. 214, small fam'y size. \$60.00	vance on List. Add to 2 cents 1/2 cent for each additioned a feet. All Mandrel Drawn Tubes under 1/2 in.
Inches	Crown No. 2. 54.00 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	pound advance.  ZINC TUBING.—net
Per dos	Eureka, No. 1. 57.00 Novelty, No. 10, with Cog Wheels. 60.00	Fancy Scotch and Extra Patterns. GERMAN SILVER TUBING
"Russell's Anti-Friction dis 50&2 %	Excelsior, No. A, with Folding Bench. 84.00 No. E, for Set Tubs. 66.00	Per cent
Sargent's list. dis 55&20 % Moore's Anti-Friction dis 45 %	No. 2, Iron " 54.00 No. 10, Wood " Common Gear 60.00	9 11 12 11 11 11 11 11 11 11 11 11 11 11
Ames. dis 32½ % " not stamped "Ames" dis 37½ %	Peeriuss, No. 2	18 ** 20 **
Rowland's. Kimball Shovel Co. dis 20 @ 2085 % Old Colony	Stamped Tinware.  Common Stamped Ware	valued at 7 cents # B., or under, 245 cents, and not above 11, 3 cents # B;
Middleboro' Snovel Co	Stamped Deep and Retinned Waredis	P B, and 10 % ad val. Railway Bas Railway Bars, in part Steel, 1 cent that Metal cemented, cast or made f
B. Rowland & Co., Anchor Brand	METALS.	Bessemer or pneumatic process, of w description, shall be classed as American Cast Stee
Shovels and Spades.   dis 2345	1RONDUTY: Bars, I to 1960. W B; Sheet, Band	STEEL.—DUTY: Bars, Ingots, Sh valued at 7 cents w s., or under, 24 cents, and 15 cents w s., or under, 24 cents, and 15 cents w s. end of a day. Railway Bars, in part Sieel, 1 cent Railway Bars, in part Sieel, 1 cents of the season of t
Polished Steel	of the above Iron shall pay a less rate of duty than 35 per cent. Pig. \$7 \$\noting\$ ton; Polished Sheet, 3c. \$\noting\$ b;	Boiler Plate
Less than a case	Wrought Scrap, \$5 \tilde{v}\$ ton: Cast Scrap, \$5 per ton. Railroad. 70c. \tilde{v}\$ 100 Bs. Boiler and Plate, 1\(\frac{1}{2}c. \tilde{v}\) B. Pig Iron—American.	Tire Machinery (round and square). File. Sheet.
Less than a case	HKON,—DUTY: Bars, 1 to 1½c. % %; Sheet, Band Hoop and Scroll, 1½ to 1¾c. % %; provided, that none of the above Iron shall pay a less rate of duty than 35 per cent. Pig. \$7 \times ton; Polished Sheet, 3c. % % in Wrought Scrap, \$8 \times ton; Polished Sheet, 3c. % % in Rolling Scrap, \$8 \times ton; Polished Sheet, 3c. % % in Rolling Scrap, \$8 \times ton; Polished Sheet, 3c. % % in Rolling Scrap, \$8 \times ton; Polished Sheet, 3c. % % in Rolling Scrap, \$8 \times ton; Pig. From AMERICAS, \$8 \times ton \$1 \times ton; \$8 \times ton	Saw Plate, mill and mulay.  gang and X cut.  circular as to sise.  Chrome Steel.  Tool. extra fine.
For	Glengarnock	ToolTool, extra fine
Spoke Trimmers	Coitness	Machinery
Ives"No. 1, \$15.00; No. 2, \$12.00 % doz, dis 40&10 % Douglass"	Rnils.	Tool, extra fine Sprink. Machinery Gun or Homogeneous. English Steet, Payable in gold, ne Best Cast.  Extra Cast.  Swaged, Cast.  Swaged, Cast.  Best Double Shear.  Blister, 1st quality.  German Steet, Best.  " 3d quality.  Sheet Cast Steet, 1st quality.  " 3d quality.  ANTIMONY.
Spoons.   dis 10&10 %	Wrought Scrap, from yard \$\pi\$ ton 22.00  Bar Iron, from Store.	" Round Machinery, Cast " Swaged, Cast " Best Double Shear
Derby Silver Co. dis 40&5&5 5 L Boardman's Sons, A1. dis 40&5&5 5 L Boardman's Sons, A1. dis 40&5&5 5	Old Rails. \$\psi\$ ton 18.00 \( \mathred{g}\$ 19.00 \\ \mathred{Strap}\$. Wrought Scrap, from yard. \$\psi\$ ton 22.00 \\ \mathred{Common Iron}\$: \( \mathred{g}\$ to 2 in. round and square. \) 1 to 6 in. \( \mathred{g}\$ \) \$\psi\$ to 1 in. \\ \mathred{g}\$ \$\mathred{g}\$ to 2 in.	German Steel, Best.
Rogers Cutlery Co. dls 40&5 % %  Rogers Cutlery Co. dls 40&5 % %	% to 2 in. round and square	Sheet Cast Steel, 1st quality
Hall & Elton	1 to 0 in. 29g to 1 in.	ANTIMONY
Space	Ordinary sizes	Pipe and Sheet, 2%c W b.  Spanish
Tin Cowles Hdw. Co.)	Common R. G. American. American.	German Refined English
Stocks and Dies dis 5&10 % Stone. Bindostan Stone. B b 6c ;	Rods = 94 and 11-10 round and square	ANTIMONY LEAD,—DUTY: Pig \$2 \$4 100 bs; old Pipe and Sheet, 226 \$4 b. Spanish. German Redned. English. American. Bar Pipe. Tin Lined Pipe. Sheet.
Stocks and Dies.	Galvanized, 14 to 20, prime, \$\psi\$ \$\psi\$ \$\psi\$ 7 c; 2d qual, \$\psi\$ \$\psi\$ 6 c	Tin Lined Pipe. Sheet. Drop 894 B Shot. BABSIT METAL.  N. P. U. A 200: B, 500: C, 120: D, 100 F B.  TIN.—DUTY: Plates, Sheets, Tagger B; Electro-galvaniaed Plates, 2 W of, not enumerated, 35 per cent, ad, and Pigs free. Banca, subject to de Banca.  Straits. P B English. TIN PLATES, CURRENCY FRI 12X12 Prime Chargoal.  1X 10X144
Washita Stone	25 to 25, " # 5 8 c; " # 5 7 c	N. P. U.  A 20c; B, 16c; C, 12c; D, 10c F B.  TIN .—Dury: Plates, Sheets, Tagger;
Arkansas Stone	Patent Planished	b; Elecro-gaivanised Plates, 20 9 1 of, not enumerated, 35 per cent. ad.
Story Polish	COPPER. DUTY: Pig. Bar and Ingot, sc; Old Copper, ac w b; Manufactured (including all articles of	Banca
Gold Medal. \$\pi\$ gross \(\pi_{\text{cos}}\), \(\pi_{\text{sis}}\), \(\pi_{\text{sis}}\)	per, 40 % 13. Manufactured (including all articles of which Copper is a component of chief which, 45 % ad valorom.  American 1800.  Braziera' Copper, ordinary sizes, 10 cs. and over 12 cs., \$\psi\$ cf. \$\psi\$.  Braziera' Copper, ordinary sizes, 10 cs. and over 12 cs., \$\psi\$ cf. \$\psi\$.  Braziera' Copper, ordinary sizes, 15 cs. and over 12 cs., \$\psi\$ cf. \$\psi\$ above 12 cs., \$\psi\$ cf. \$\psi\$ above 12 cs., \$\psi\$ cs. and over 12 cs., \$\psi\$ cs. and over 12 cs., \$\psi\$ cs. and 12 cs., \$\psi\$ cs. ft. \$\psi\$ above 12 cs., \$\psi\$ cs. and cover 12 cs., \$\psi\$ cs. and 12 cs., \$\psi\$ cs. ft. \$\psi\$ above 13 cs., \$\psi\$ cs. and cover 12 cs., \$\psi\$ cs. and 12 cs., \$\psi\$ cs. ft. \$\psi\$ above 13 cs., \$\psi\$ cs. and 12 cs., \$\psi\$ cs. ft. \$\psi\$ above 13 cs. and 12 cs., \$\psi\$ cs., \$\psi\$ cs. ft. \$\psi\$ above 13 cs. and 12 cs., \$\psi\$ cs., \$\psi\$ cs. ft. \$\psi\$ above 13 cs. and 12 cs., \$\psi\$ cs., \$\psi\$ cs. ft. \$\psi\$ above 13 cs. and 12 cs., \$\psi\$ cs., \$\psi\$ cs. ft. \$\psi\$ above 13 cs. and 12 cs., \$\psi\$ cs., \$\psi\$ cs. ft. \$\psi\$ above 13 cs. and 12 cs., \$\psi\$ c	I C 10X14)
Naguarrs.  Steel	Braziers' Copper, ordinary sizes, over 16 oz.,	IX 10X14 Prime Chargonal
Nickel Platedadd \$2.50 @ \$4.00 \( \psi\$ doz, net \) Cash Try Squares and T Bevels	over 12 of, \$\text{q}\$, \$\text{ft}\$	1X 10x14/ 12x12 Prime Charcoal. 14x30) DC 13\(\frac{1}{2}\) 17 DX 12\(\frac{1}{2}\) 17 For each additional X add
Disston's Try Squares and T Bevels	Circles less than & in. in diameter # 340 Circles & in. diameter and over # 3310	For each additional X add
Tacks. Brads, &c. — List of January 1, 1870.     Tacks. Haff Weight, American. dis 75     Full	Segment and lattern Sheets	I C 10X14   Best 3d qual   I C 12X12
Half " Swedes dis 65 Full " dis 30	Copper Bottoms	Prime Char. 2d qual.
Carpet, Am. and Swedesdis 20 Leather Headnet	to exceed 34 os. to the sq. ft. TINNING.  14x48, by the case	I C 14x20\$6.13\(\)\(\)\(\)\(\)\(\)\(\)\(\)\(\)\(\)\(\
" Copper	I4X4S, less than case	Prime Char. ad qual. I C 14x20. \$\mathref{B}\$, 1356 @ \$\mathref{B}\$, 25 5.75 @ \$\mathref{G}\$ \$\mathref{G}\$ \$\mathref{G}\$\$ \$\mathref{G}\$\$ \$\mathref{G}\$\$ \$\mathref{G}\$\$ \$\mathref{G}\$\$ \$\mathref{G}\$\$ \$\mathref{G}\$\$ \$\mathref{G}\$\$ \$\mathref{G}\$\$\$ \$\mathref{G}\$\$\$ \$\mathref{G}\$\$\$ \$\mathref{G}\$\$\$\$ \$\mathref{G}\$\$\$\$\$\$ \$\mathref{G}\$
Shoe Nalis— 4-8ths and longer, 8c; 314-8ths 9c P B.net Trunk, Clout and Finishing Nalis—	14 and 16 oz. and heavier. * B 34c By the case. P B 33c	SOLDER
36 % 36 16 1 13 in. and over. 25 20 17 14 13 11c F Dnet	7 In., 1432. 2 lin., 1436. 14 and 16 ox and heavier. \$\psi\$ 350 19 ox and lighter\psi\$ 370 19 ox and lighter\psi\$ 370 10 ox and lighter\psi\$ 370 10 ox and lighter\psi\$ 370 11 ox and lighter\psi\$ 370 12 ox and lighter\psi\$ 370 13 ox and lighter\psi\$ 370 14 and 16 ox and heavier. \$\psi\$ 350 14 and si ox and heavier. \$\psi\$ 350 15 ox and lighter ox	Silesian, cash
Tap Borers. Common and Ring. dis 20&10 9	(And all sizes not over 20 in. wide.) 30Xto. 14 and 16 oz. and heavier	SPELTER—DUTT: In Pigs, Pare 100 hs. Silesian, cash. American, cash. Lehigh, on spot. ZINC.—DUTT: Pig or Block, \$1.50 2440 % S. Sheet, Cask.
Enterprise Mfg. Co	12 08. F B 410	" Open
Eddy's	Brown & Sharp s Gauge the Standard for Meta; Old Espish Gauge the Standard for Wire. BRASS MASUFACTURERS' PRICE LIFT. January 1, 1878. Cash prices for Roll and Shoot Brass. For less quantity than 100 St. add 20 E. S.	Paper Stock, U10 M (Dealer's Selling Price
American Tea Tray Codis 15 Thermometers.	Cash prices for Roll and Sheet Brass. For less quantity than 150 bs. add 30 P b. HIGH BRASS.	canvas arasis.
Double Pointed Tacks	All Nos. not thinner than to No. 28, wider than 2 in., not wider than 14 in. 16 in. 17 in. 17 in. 18	Paper Stock, Old M  Canvas linen.  " outton, No. 1.  " No. 2.  White linen rags, No. 1.  Mixed woolens.  Softno Congrig.  Jute Butts.  Kentucky bagging.  Waste paper and scraps.  Rope cuttings.  Kentucky bale rope.  Oakum junk, No. 1.  Orass rope.  Oakum junk, No. 1.  Grass rope.  " Envelope muslin lined.  Hard White Shavings, No. 2.  White Shavings, No. 2.  White Shavings, No. 2.  Wixed Shavings, No. 2.  Mixed Shavings, No. 2.
All Iron # dos \$10.50, dis 4085   Nashua Lock Co. 8 # dos \$18.00, dis 50	All Nos. to No. 38, inclusive, and widths over 14 to 330 All Nos. to No. 38, inclusive, and widths over 20 to	Soft woolens
Nasnua Lock Co.	30 in., inclusive	Kentucky bagging
Trups.	Sc. P & advance on each No. above Nos. 3s to 3s, in- clusive.  All Brass thinner than No. 3s is Platers' Brass, at	Rope cuttings
Tools (P. 5. & W.)	Printers' Rules. 440 Sheets wider than 30 in. and under 40 in. 450	Grass rope
Patent Choker (Union Nut Co)	Circular Sheets, in diam. from 4 in. to 14, inclusive 300	White coliar cuttings, all paper muslin lined.
Cage do not not not not not not not not not no	1	Hard White Shavings, No. 1
Rat, "Decoy"	4c * * more than High Brass, Gilding Metal, Sc * * more than High Brass.	Mixed Shavings, part white
Trowels. Lothrops Brick and Plasteringdis 10 Disston's Brick and Plasteringdis 20 Peaco's Plateringdis 20 Clement & Maynard'sdis 20	40 % % more than High Brass, Gilding Metal, 80 % % more than High Brass.  (In Bars.  Platers' or Gold Metal Sawed Planed or Polished. 58  POR ELITERIA	Soft No. 1. White Shavings, No. 2. Mixed Shavings, part white. Imperfections, No. 3, best folded she. Rook Stock No. 1, Heavy Stock.  Book Stock Mixed No. 2, light. Newspaper Stock.
Clement & Maynard's disso- Rose's Brick diss; Brades' Brick gold, disso- Worrall's Brick and Plastering. disso- Garden. disso-		
Worrall's Brick and Plasteringdls 20 Gardendis 25% in Triers	- Annual 10 10 10 10 10 10 10 10 10 10 10 10 10	Commons
Tuyere Irons.	No. 26, 2c. P B advance.	Commons. Binders' Board Cuttings Straw Board Cuttings Woolen Tailor Clips. Satinet
Vince. Solid Box, Trenton	Metal, in width % in. to % thinner than No. 28, 50. We hadvance.  Metal, % in. in width and less, 100. We hadvance.  Any of the above widths cut to particular lengths, add	Old Metal.
Vises. Visid Box, Trenton	Any of the above widths cut to particular lengths, add	Yellow Metai
Peter Wrights	4 per cent., 12 inch, to No. 26. Market Metal. Wire	Heavy Composition.
" Trentondis 25	1 15 14 14 14 14 14 14 14 14 14 14 14 14 14	ZincPewter, No 1
# Merrill's dis 15 # Fisher & Norris dis 15 # Buffalo dis 15&10	German Silver Sheets over 12 in. wide and weighing more than 16 hs., \$2.25 \$ h. Advance 2c. for each additional inch in width above	Yeliow Metal Brass, light.  "heavy Composition Old Lead, solid Tea Lead. 2 linc. Pewter, No. 2 Wought Iron. Machinery Iron. Light Iron. Btove Plate.
Stevens' dis 25 Simpson's Adjustable dis 25 Saw Filers Banney's Adjustable dis 25	Advance 2c. for each additional inch in width above 12 in., and 2c. w b on each No. thinner than Nos. 26 to 36, inclusive.  All German Silver thinner than No. 36 is Platers, a	
## Backus and Union dis 25 ### Merrill's dis 15 ### Fisher & Norris dis 15 ### Buffalo dis 35 ### Stevens dis 35 ### Stevens dis 35 ### Fisher & Norris dis 35 ### Fisher & Norris dis 35 #### Fisher & Norris dis 35 #### Fisher & Norris dis 35 ####################################	All German Silver Scrap one-third less than not price of 12 in. Market Metal. German Silver Turnings, Filings and Chips, half the price of Scrap.	Paints. Oils.
Ventilators Protective (upper) per foot, \$1.00.	and Chips, half the price of Scrap.	Black Lamp, Coach Painters
Ventilators.  Protective (upper) per foot, \$1,00.  (lower) 1.50.  Washer Cutters. Smith's Patent. Johnson's. Johnson's.  W dos \$12.00 and \$12.00, dis 205.  Penny's.  W dos \$2.00 and \$2.00, dis 205.  Pany's.  W dos \$2.00 and \$2.00, dis 205.  Pilipieca's.  W dos \$2.00 and \$2.00, dis 205.	High Brass. Low Brass. Copper	Black Lamp, Coach Painters. Ordinary. Ivory Drop, fair. Black Psint in all. Black Psint in all. Black Prussian, fair to best. in oil.
Penny's	No.21	Blue, Prussian, fair to best

HE IRON AGE	
0.34	Brow Carm Green
Spring Wire at \$\mathbb{B}\$ advance. First, Square and Half Round Wire \$c \$\mathbb{B}\$ advance of Round Fancy Wire not less than soc \$\mathbb{B}\$ advance of Round Vire.  Brass Rods, No. \$\mathbb{B}\$ and smaller not less than \$\mathbb{I}\$ feet lengths, 4c.  Wire straightened and cut, smaller than No. \$\mathbb{B}\$, and of less than \$\mathbb{I}\$ feet lengths, 9c.  Wire and Rods less than \$\mathbb{I}\$ feet lengths, special rates. Twelve cents per \$\mathbb{B}\$ extra for spooling on \$\mathbb{B}\$ spools. Sommon Plain Brass Pail Ears.  \$\mathbb{B}\$ common Plain Brass Pail Ears.  \$\mathbb{B}\$ common Plain Brass Rotap for \$\mathbb{B}\$ conditions \$\mathbb{B}\$ covered the price of \$\mathbb{B}\$ crass. The price of \$\mathbb{B}\$ crass. The price of \$\mathbb{B}\$ crass. Interest to be added after thirty as \$\mathbb{B}\$.	Mine Oran Red i
Plain to No. 20 inclusive, above 5 (in. to 5 in	White White Yello
All Mandrel Drawn Tubes, 5 cents advance on List Prices. ancy Tubing to No. 20. After Patterns Fancy Tubing After Patterns Fancy Tubing Sawed or Cut 2 to 4 feet long, 2 cents advance on List. Add to 2 cents ½ cent for each additional cutting under 2 feet. All Mandrel Drawn Tubes under ¾ in., 25 cents per pound advance.  Zinc Tubino.—net.  Pain. 27 Sancy 28 Section and Extra Salary Salary 38 Section and Extra Salary 31 Section 33 Section 33 Section 33 Section 33 Section 33 Section 34 Section	Lins.
4 Per cent	Neat
Congeneous   1960	1
Fool	PRITITION
ANTIMONY LEAD.—DUTY: Pig \$2 \( \pi \) too \$\mathbb{n} \( \); did Lead, 1\( \pi \) co \$\mathbb{n} \( \); Pipe and 8\( \mathbb{n} \); co \$\mathbb{n} \( \).  Pipe and 8\( \mathbb{n} \); co \$\mathbb{n} \( \mathbb{n} \); die \$\mathbb{n} \( n	
Shot Depoy States, 94c, dis to \$ N. P. U. Barsty Metal.  N. P. U. Barsty Metal.  A 20c; B, 16c; C, 12c; D, 100 \$\frac{1}{2}\$ B.  TIN.—DUTY: Plates, Sheets, Tagger and Terne, 11c \$\frac{1}{2}\$ \$\frac{1}{2}\$ \$\frac{1}{2}\$ Manufactures of, not enumerated, 35 per cont. ad. val. Bars, Block and Pigs free. Banca, subject to duty of 10 per cent. Banca.  Banca. \$\frac{1}{2}\$ \$\frac{1}{2}\$ 16 \$\frac{1}{2}\$ 17 currency Straits.  TIN PLATES, CURRENCY PRICES  IX 12X12 Prime Charcoal.  \$6.50 \$\frac{1}{2}\$ 5.00 \$\frac{1}{2}\$ \$\f	S
D X 12/4317	
Prime Char. 2d qual. Coke	at
Paper Stock, Old Metals, &c	
Canvas linen. (Dealer's Selling Price.)  Canvas linen. (4	
Tarrod shaking with the shaking sail paper	
Book Stock	A
opper, heavy	
Light from per ton 1500 Biove Plate Bart. Ber ton 2000 Be	A

Blue Chinese dry	Asphantum				08
Brown, Spanish	Benzine Chaik			P 20	al. 160
Carmine, 40combination price	Block.				54.2
Freen, Chrome	Block. Dryer, Patent, Am'n	.nes't	cans, r	olije : k	eg,90
Paris good ase: best, see	Frostings			*******	(0.440)
" in oil " 300; " 450 from Paint, Bright Red " 300; " 2 30	" Sheet			33	
ron Paint, Bright Red # 18 24/40 Red # 18 20	Glaziers' Points, Zinc				30
	Gum, Copal Damar				. 300
" Purple P m 30	Shellac, English				300
Ground in Oil, Bright Red P m 51/20	Shellac, English				250
H H H Brown 30 % 4120	Litharge, Englisgh			90	guia
" Purple # % % 6c	" powdered	9			4 (g) 0G
Brown # b 1/4c Purple. # b 3/4c Ground in Oil, Bright Red. # b 5/4c  " Red. # b 5/4c " Brown # b 4/4c " Purple. # b 6c Mineral Paints. 1/4 (8 4c	Putty, in bladders				254G
Drange Mineral.         100           Red Lead, American.         500           English.         9,50           Venetian (N. C.) dry         \$1.70           British         101           ass'd cans, irc; kogs, 60           Tudies (ass, irc; kogs, 60	Rotten Stone, soft, Englsh Spirits Turpentine				209
** Venetian (N. C.) dry	Whiting Spanish				330
in oil asst'd cans, me; kogs, se	Glas				
" Indian dry	PRENCH WIND		A SEE		
Menns, American, Raw	Prices current pe			t.	
Burnt	Single Thick	discoun	nt 60 %		
" Raw " 11 @ 15 @ 25c Umber, Burnt 4 @ 8c	SIZES.	rst.	ad.	301.	4th
Umber, Burnt	6 x 8 to 10 x 15	8 7.50	\$ 6.75	\$ 6.25	8 5.2
Raw also	11 X 14 to 16 X 34	8,50	7-75 9-75	7.25	6,50
" in oil	13 X 22 to 20 X 30	10.75	9-75	8.75	9 91
Vermillion, Chinesegoc, gold	15 X 36 to 24 X 30	12.25	10.75	9,00	
English	26 X 28 to 24 X 36	13.00	11.50	10.75	
Trieste	26 X 46 to 30 X 50	15,00		11.25	
White Lead, American, pure dry	20 W 62 10 20 W 64	16.00		12,00	
" " in oil	30 x 56 to 34 x 56	17.25		13.50	
White Lead, American, pure dry         8c           white, Paris, English, prime         in oil         84c           white, Paris, English, prime         in bbis. 2 @ 21c	30 x 56 to 34 x 56 34 x 58 to 34 x 60 36 x 60 to 40 x 60	18.25	17.29	15.00	
	30 X 00 to 40 X 00	20,74			
ii ii ii oilasst'd cans, 110; kegs, 80	Double Thick.—			-	
	SZZES.	ıst.	ad.	30.	41 12.
Zine White, American No. 1, dry	6 x 8 to 10 x 15	\$12.00	\$11.00	\$10,00	8 0.7
No. 1. in oil	11 X 14 to 16 X 24		12.50		10.5
French (Paris)	18 x 22 to 20 x 30	17.25	15-75	14.00	
" in oil 101/4 @ 111/40	15 X 36 to 24 X 30	19.75			
4611-	26 X 36 to 26 X 44	23,25			
Otls.	26 x 46 to 30 x 50	24.00	22.50	18.00	
Linseed, Raw, in casks and bbls F gal. for @ for	20 Y 52 50 20 Y 54	20.90			
Boiled, " " 1 670 @ 680	30 x 56 to 34 x 56	27.75	25.00		
Linseed, Raw, in casks and bbls # gal. 6ac @ 6ac "Botied, " " 67c @ 56c Whale, Crude bbl. 6ac @ 6ac @ 5ac @ 5ac bbl. 6ac @ 6ac bbl. 7ac	36 x 60 to 40 x 60	33-25			
	Man shows of A				
Cotton Seed, Crude bbl, 500 Southern Yellow bbl, 500 White bbl, 600	five inches.	Fier ()	UM UM	101	2105)
Southern Yellowbbl, 55c	An additional to per cent	will.	be cha	arged 1	for al
Watefoot Winter	Glass more than 40 inches inches in length, and not mainches, will be charged in the	wide.	All si	zes ab	ove s
Neatafoot, Winter	inches will be charged in the	e Saura	ited in	ches by	unite
300 @ 300	I THURSON MARE OF CHINERACT IN CO.	e of gn	*******	CHOS OF	100 W. W. La.

# lardware, Iron & Nails, Bolts, Nuts, Washers, Screws, &c.

# THE FLETCHER POST HOLE AUGER.

The best, the cheapest, the most durable and the handiest Earth Auger in Market. Made from the best cast steel; will bore three holes while any other Auger is boring one, and is run with less power; works readily in clay, sand, gravel or muck soil, and will cut sharply through grass or root sods without the use of shovel or spade to start it. Retail price, net, \$3.50 each. To the trade, \$3.00 each. Less 20 per cent.



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Steel, Bellows, Anvils and Vises.

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"CHAMPION" IMPROVED ICE CREAM FREEZER.



GEARED F	REEZERS.
No. 20. 3 quart. No. 21. 4" No. 22. 6 " No. 23 8 " FLY WHEEL	NO. 95
No. 28 16 quart. No. 29 20	
FRAME F	REEZERS.
No. 33	32 quart.

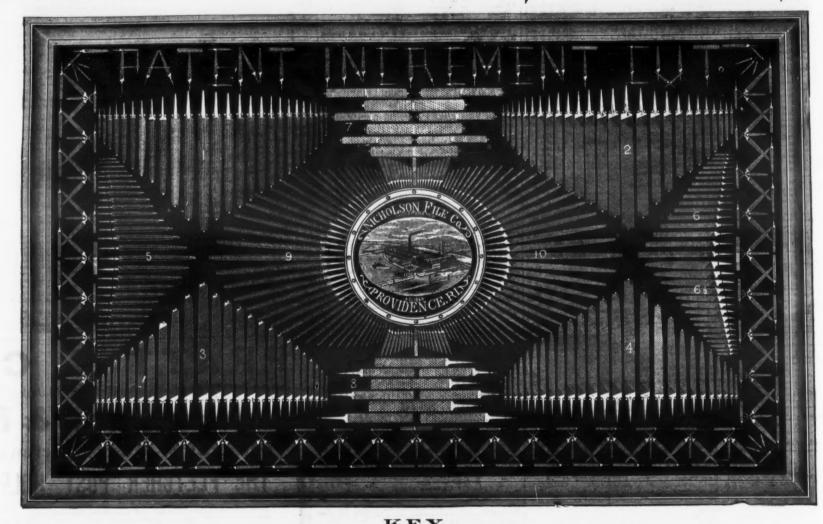
DUPLEX FREEZERS.

SOLE MANUFACTURERS, Sidney Shepard & Co.

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1.-Half Round.

3.-Mill.

5.—Triangular. 6.—Pillar. 6%.—Knife. 7.—Plain Rasps. 8.—Tanged Rasps. 9.—Round.

PERCH CO., Bridgeport, Conn.

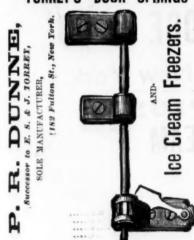
10.—Square.

In addition to above we manufacture FILES AND RASPS of every description and kind known to the trade. These goods are not excelled, and by a large proportion of both Consumers and Dealers are admitted as superior to any either of Foreign or Domestic Manufacture. We are constantly improving and adding to our machinery, and by carrying a stock of from 30,000 to 50,000 dozen Files on our shelves at all imes, we are enabled to fill orders with the utmost dispatch, thereby saving both loss of Trade and Interest to our customers.

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Budke's Patent Sheet Iron
MEASURES.

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BUCKETS.
Powder Kegs, Paint,
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PAILS.

Also Cold Rolled Sheet Iron, Bar, Sheet and Tank Iron
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The Bowl only revolves, not the handles. Nothing yet invented equal to our Revolving Scraper for moving earth. Send for Circular.

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# AMERICAN SCREW

# IMPROVED

Gimlet Pointed Wood Screws, Patented

1876.

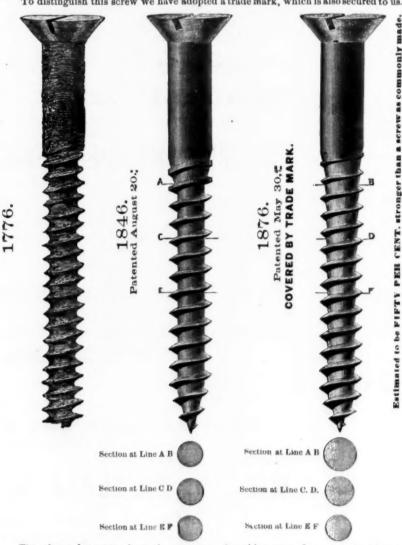


After forty years' experience we offer to the trade our Centennial Screw, patented May 30, 1876, as the best we have ever known.

The method of manufacturing is also patented, and we are changing our machinery as fast as possible, to manufacture the improved article only. To introduce them, they will be sold at same price as the old style screw.

The new screws will be packed in manifactored boxes with new label covering end of box, and enlarged figures showing plainly contents.

To distinguish this screw we have adopted a trade mark, which is also secured to us.



The above drawings show the progress of making screw from the old blunt point to style now adopted.

Experience has shown that the weak point of screws, as formerly made, is at the heel of the thread, where all the strains of forcing the screw into the wood naturally

To avoid the sharp angle existing in the old style of screws has been the aim of all manufacturers, but every expedient hitherto adopted has proved as objectionable as the evil complained of.

It will be seen in our **new screw** that not only is the sharp angle avoided, but the strength very much increased, as illustrated above. See sections at lines.

CLAIM.

"A Pointed Wood Screw having the outer periphery of the thread upon us body cylindrical, while a portion of the body below the thread and near the neck is conical, the remainder of the body to the point being cylindrical, and yet having all the thread brought to an edge of a constant angle, without jogs in the paths between the threads, substantially as described."



JEWETT'S **PATENT** 

**Porcelain Lined** COOLER.

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TACKS & SMALL NAILS.

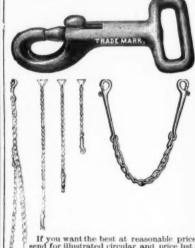
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Clock Springs and Small Springs

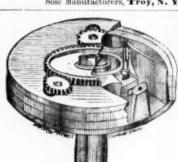
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Covert Harness Snap, Horse and A Cattle Ties, Breast Chains, Halter Chains, Post Chains, Rein Chains, &c. These goods are sold by all leading jobbers in general and Saddlery Hardware at manufacturers' rices. Sample snap sent free of charge if desired

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Sprague's Improved Steam Engine and Pump Pistons.

ed to save to per cent, over any now in use attion given to repairing, improving, &c 628 and 630 Filbert St., Philadelphia.

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CAST STEEL WIRE for all purposes.

Cocker's "Meteor" Wire Plates. SWEET'S MANUFACT Railroad Supplies and General Merchants. Office and Warehouse, 46 Cliff Street, New York.

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> Cast Steel Hammers and Sledges. Also, "M. & G." Anvils and Vises. WARRANTED CAST STEEL, especially adapted for DIES and TURN-PUNCHES and all kinds of MACHINISTS TOOLS, DRILLS, COLD CHISELS, Celebrated Improved Mild Centre Cast Steel, for Taps, Reamers, and Milling Tools, warranted not to crack in hardening Taps of any size. Swode Spring Steel, especially adapted to Locomotive and Railway Car Springs.

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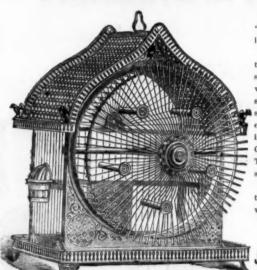
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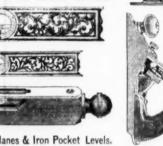
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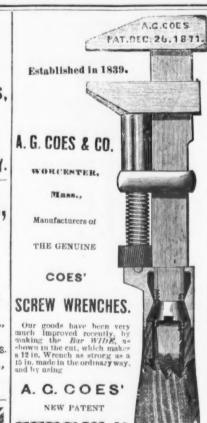


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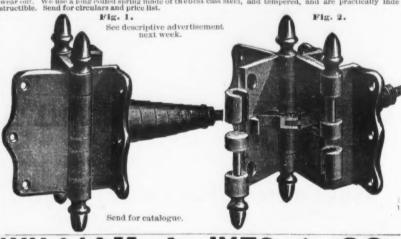
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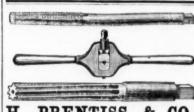


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U net U net U net	Girard (Coe's Pattern)dis 50&10 %, case 50, 10&5 %	Ne
50 s	Agricultural—  doz 10 in., \$3 60; 12 in., \$5 40 net; case dis 5 %  Coes tenume	So
8 15 % 8 4 1 5 8 50 %	Taft's "Wrot dis 75 @ 77 & 1   5   Phila. Tool Co., Duplex dis 2   5   Wire. — dis 2   5	W
& 10 % & 10 % & 10 %	16 No. 9 to 26 11 11 15 17 16 26 11 2 1 1 1 1 1 1 1 1 1 1 1 1 1 1	
& 10 % 8 25 %	Tinned Broom Wire. dis 45 @ 47% 4 Galvanized, No. 7 to 18 Market list, 41s 50 @ 55 s Wringers.—Noveity No. 10. @ 40x, \$60 00 net	1
6 75 % & 10 %	Wire.   Wire	5e
10 % 10 %	PITTSBURGH.	5-1
210 % &10 % -cash	Merchant Iron.	5a. 7-1
& 20 & × 50 % × 55 %	1½ to 43% to 1 in1.80c 1½ and 1½x3½ to 3½ in.1.90c 4½ to 63% to 1 in1.90c 1 and 1½x3½ to 3½ in 2c 1¾ to 631½ to 1½ in20c 1½, 3½ and 3x3½ to 5½ in.2.20c 9%, 3½ and 3x3½ to 5½ in.2.20c 9%, 3½ and 3x3½ to 5½ in.2.20c	Ju
& 10 % A 50 1 & 10 % & 10 %	Rounds and Squares	Sto
2 10 % 2 10 %		Th
\$ 10 4 \$ 10 4 \$ 10 5	Heavy Bands.  1 to 136x 4 and 5-162.10c  34 to 5x4 and 5-162.30c  15 to 34x 4 8 5-16 in 2c  56 & 4x 4 and 5-162.30c	To
\$10 % \$10 % \$10 %	Light Bands. 1 to $1\frac{3}{4}\frac{3}{4}\frac{3}{6}$ to $3\frac{1}{6}$ . 2, 50c 3 to $6\frac{3}{6}$ to $6\frac{3}{6}$ to $6\frac{3}{6}$ and $6\frac{3}{6}\frac{3}{6}$ to $6\frac{3}{6}$ to $6\frac{3}{$	25 125 Re
10 % 8 60 %	Same sizes X No. 11 and No. 12 2-10c, extra. Hoop Iron. 54 & 9-16, Nos. 13 to 15. 4-50c 54 & 11-15, Nos. 17 to 20. 4-30c	Or Lit Dr
60 % 210 % 210 % Rold	Hoop Iron.  \$\frac{9}{8} & \text{ & e.} \text{ (Nos. 17 to 20., 4.8cc} \]  \$\frac{9}{8} & \text{ & e.} \text{ (Nos. 17 to 20., 4.8cc} \]  \$\frac{9}{8} & \text{ & e.} \text{ (1-10, Nos. 17 to 20., 4.8cc} \]  \$\frac{9}{8} & \text{ & e.} \text{ (Nos. 13 to 16. 4c} \]  \$\frac{7}{8} & \text{ & e.} \text{ (Nos. 17 to 20., 3.8cc} \]  \$\frac{1}{8} & \text{ (Nos. 13 to 16., 3.8cc} \]  \$\text{ (Nos. 13 to 15., 3.8cc} \]  \$\text{ (Nos. 13 to 15., 3.8cc} \]  \$\text{ (Nos. 13 to 15., 2.8cc} \]  The prices under Hoop Iron do not apply to Cotton Ties.	
c net	The prices under Hoop Iron do not apply to Cotton Ties.	_
gold 10. 210 \$	Oval Iron.  % to 1½ in 2,200 ½ in 2,600 b to ½ in 2,400 ¼ in 200	6
gold 210 % 210 %	Half Oval & Half Round   \( \frac{1}{2} \) in	15 26 26
20 s 35 g		30
lanu	No. 10 to 14, 2560   Arc   No. 22 to 24, 33,90   4560     No. 15 to 17, 2560   Arc   No. 25 & 26, 35,60   50     No. 18 to 17, 2560   Arc   No. 25 & 26, 35,60     No. 18 to 27, 35,00   Arc   No. 25, 35,00     No. 18 to 21, 35,00   Arc   No. 25, 35,00     All Sheets, No. 18 and lighter, over 30 in, wide, not	34 36
&10 g	less than 2-10c. extra.  Wood's Patent Planished Shect. rst quality (A)	18 15 15 26 1
60 % 10-00 8 60 %	Plate Iron—3-16 to 16 in. thick	26 1
8.00	Nos. 14 to 20	30 1 30 1 34 1 36 1
35 g 35 g gold gold	RoofingIron, Corrugated or Crimped. Galvanized Common. Black.	gla
0 net	Bridge Iron.	inc
10 %	Carnegie Bros. & Co.'s list.  Beams and Channels.  Solid Wrought Iron Beams, 2 to 1014 in x20 ft. 30 ft. 2 c.	
10 % 0 net	Solid Wrought Iron Beams, 3 to rol4 in x30 ft. # h 3 c iii 12 in. by 25 ft. iii 3 kc lee keams, 1 to 10 in. by 25 ft. ii 3 kc lee keams, 1 to 10 in. by 30 ft. ii 3 c lee keams, 1 kg to 10 in. by 30 ft. ii 3 c lee keams, 1 kg to 10 in. by 30 ft. ii 3 c lee keams, 1 kg to 10 in. by 30 ft. ii 3 kg lee keams, 1 kg to 10 in. by 30 ft. ii 3 kg lee keams, 1 kg to 10 in. by 30 ft. ii 3 kg lee keams, 1 kg to 10 in. by 30 ft. ii 3 kg lee keams, 1 kg to 10 in. by 30 ft. ii 3 kg lee keams, 1 kg lee kg	TI
90 %	100 11010.	10
30 % 30 % 25 %	r in.xr in. to 5 in.x3 in	1
10	Equal Sided, 1xr to 13x134 in	20
22 23 18	Sfar Iron, 15(x7)5/2 to 4x4.       " 2.7c         Sash Iron, 15(x7)5x3-16.       " 3.25c         Miscellaneous Shanes. various shapes # B, 2.6 to 3.5c	Ball
17 18 net	Addis.	Sm
cash	Fence and Brads,  10d to 66d \$2.00   4d and 5d \$3.25   8d and 9d \$2.75   3d \$4.00   6d and 7d \$3.00   2d \$2.5    Barrel.   1½ ln \$4.25	Cosp
cash 35 % cash		B
50 %	Lining.   R   S   S	Br
3 00 net	10d	BBNE
net	5d. 3.50 3d. 4.25 4d. 3.50 2d. 5.50 Finishing. 1½ to 1½ in. 4.50	AB
20 %	7.50 2 in	Sh
k10 %	Casing and Box. 6d 3.75 rod to 3od 3.25 4d 4.00 8d 5.00	N
51% 210% 30% 30%	Stating   Stat	Gu
\$5 % \$5 %	Each half kee to cente outre	R P An
35 %	TERMS.—Note or acceptance at to days; or a discount of a per cent. For eash, if remitted within 10 days from date of invoice. An abatement of 10 cents per keg allowed upon orders of 20 kegs or over.  Steel.	Le P
10 % 10 % 10 %	Square, Flat and Octagon Tool Steel,	C
10 % 10 %	74 and 3% to 4 in	(
25 % 10 % 10 %	Manhinena Steel Dound	
86°50 800 810 40	\$6 to 2 in	(
12°00 300 25 % 16°57		50
300	Solid Cast Steel Plow, 4 to 16 by 3-16 to 36 in. 70 "Iron Center Plow," 4 to 16x3-16 to 36 in. 8c "Iron Back Plow," 4 to 16x3-16 to 36 in. 8c Soft Steel Center Plow, 4 to 16x3-16 to 36 in. 8d Soft Steel Center Plow, 4 to 16x3-16 to 36 in. 9c Landside and Cultivator, C. S., 36 in. thick. 94c Circular Plow Coulters, 5-32 to 34 in. thick. 11c	1
45 % 0 net	130   130	H
net	Fork and Hoe	
20 % 30 %	Oheat Oheate	M
net net net	German, 10 to 16 g 80 Common C'st, 17 to 20 g. 10c Hest Cast, 10 to 16 g 13c Common C'st, 10 to 16 g 13c Hest Common C'st, 10 to 16 g 14c	A
&5 % SU 1 2% C 40 %	Holls and Castings.  Furnace, Floor and Straightening Plates 134 @ 2c  Housings and Castings not otherwise specified 245c	
net	Spindles and coupling boxes	
e net e net e net	Pipe Mill Castings	Ge
e net	Pipe Mill Castings	-
e net	heavy	Pá
Mes c	Chilled Rolls. 3340 Chilled Rolls. 6 c 8 to 7 in. diam., 7 to 20 in. long. 6 c 8 to 15 in. 8 to 40 in. 5 c 15 to 24 in. 15 to 73 in. 4 c 24 to 31 in. 7 to 108 in. 45c	
625 % 10 % 10 %	Heavy Hardware, Bots, Sereus, Nuts, etc. Lewis, Oliver & Phillips, discount off Standard List, Carriage & Tire Bolts, ordinary orders 75, & 5 off net Stove Bolts. 40&5 off net Elevator Bolts. 30 of off net Machine and Square Head Bolts. 50&10 off net Coach and Lag Screws. 50&10 of net Bolt Ends. 50&10 off net	6
20 % 20 % net	Carriage & Tire Bolts, ordinary orders 75, & 3 % off net Stove Bolts	-
dia	Coach and Lag Screws	is p

Nuts and Washers in 2t b b and Washers in lots less than ## be x. Nuts and Washers Strap and T Hinges.  Harrow Teeth. Skein Bolts. Cast Iron Washers. Fire Shovels and Pokers.  Wagon Harr Single Trees, Neck Yokes an Iron best selected hickory, a the most approved patterns. No. 1 Southern Plow Single T complete, Irons all Wrought. No. 2 Western Plow Single Treen in Iron Iron Bestern Plow Single Treen Iron Irons all Wrought. No. 3 Wagon Single Tree, Iron Irons all Wrought, except Martile.  Iron Washern Plow Single Treen Iron Irons all Wrought, except Martile.  Iron Washern Plow Single Treen Iron Irons all Wrought, except Martile.  Neck Yoke, Ironed complete Wrought except End Ferrule Iron Rings.  Southern Plow Double Tree, Iron Iron Iron Single Treen Iron Wrought except End Ferrule Iron Rings.  Southern Plow Double Tree, In plete, Irons all Wrought.  Wagon Box Strap Bolts—  To Un. 9 10 11 11 11 11 11 11 11 11 11 11 11 11	d bound ired in the common of	the transfer of the transfer of the transfer of the transfer of tr	rees, omple ach, 20 ach, 30 ach, 50 ac	made te, in 5c net 5c net oc net
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No. 4 Wason Single Tree, frome from all Wrought; Improved riveted on; one side acts as a for wheel to rub against.  Neck Yoke, froned complete Wrought except End Ferrule Southern Flow Flow Flow Southern Flow Flow Southern Flow Flow Flow Flow Flow Flow Flow Flow	d complement of the complement	plete, ricces ricces ricces all h wt	ach, 50	oc net oc net 45c 55c 65c 70c
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No. 4 Waron Single Tree, Irone Irons all Wrought; Improved riveted on; one side acts as a for wheel to rub against  Neck Yoke, Ironed complete Wrought except End Ferrule Iron Rings.  Southern Flori Number Tree, in Many Southern Flori High Sout	d complement of the complement	plete, ricces ricces ricces all h wt	ach, 50	oc net oc net 45c 55c 65c 70c
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20 in. " \$\frac{5}{2}\$ of the for each additional intengths made.  Chains, Straight or \$\frac{5}{2}\$ in. \$\frac{7}{2}\$ is \$\frac{7}{2}\$ in \$\f	ch ove	er 14 l	00 3	1 100
se it set for each additional in- lengths made,  Chains, Straight or  5-16	ch ove	er 14 l		. 1,10
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Chains, Straight or 5-16	Twi	st Li	nenes	All
5-16		194. HAR	nle	
7-16			III.	and a
7-16				.6160
Juniota Horse Shoes				51/20
Juniata Horse Shows	EA.			
W SERVICE CO. LEGISLAND STREET, STREET		104	er keg	\$3.80
Juniata Horse Shoes.  Mule In 100 keg b			44	4.80
Snow, Mud and Trotting Shoes	OES.		14	4.00
In 100 keg le Suow, Mud and Trotting Shoes Steel Tee Calks. Thistlewood & Co.'s Self-Shar Shoes.			per lb	1. 71gc
Shoes Co.'s Self-Shar	rpenin	g Ho	180 an Iron	
Thistlewood & Co.'s Self-Sharpe	nings	Snow		
Toe Carks			· · · · per	ID, oc
Assorted Kegs (all sizes)	d Lei	net.		Ske
25 lb Tin Pails, 100 lb Cases			*******	85gc
Red Lead in kee	er esta	: in is	uwwol.	11.90
Orange Mineral	100		io io	9346
Assorted Kegs (all slizes). 25 B Tin Pails, 100 B Cases. 1246 B Tin B Red Lead. 10 ked Lead. 10 keg Orange Mineral. Litharge. Dry White Lead.	7340		10	712C.
Dry white Lead	7740			7190.
Window G	lass.			
Per Box of 50 FeetDisco	unt 70	% 60 70	de 10 %.	
Single Stren		4-81 ( 00000 (0		Martingage
Size.			n .	C
	AA.		B.	
6 x 8 to 10 x 15	\$7.50	\$6.75 7-75	\$6.25	85.7
II X 14 to 16 X 24	8,50	7-75 9-75	7.25 8.75	6.5
15 X 36 to 24 X 30	10.75	10.75	9.00	7-7
26 x 28 to 24 x 36	13.00	11.50	0.75	
20 X 36 to 26 X 44	14.50	13.25	10.75	
6 X 8 to 10 X 15.  11 X 14 to 10 X 24.  11 X 12 to 10 X 29.  11 X 12 to 20 X 30.  20 X 30 to 24 X 30.  20 X 30 to 24 X 30.  20 X 30 to 24 X 30.  20 X 30 to 25 X 30.  20 X 30 to 25 X 30.  20 X 30 to 25 X 30.  20 X 30 to 30 X 30.	15.00	14.00	11.25	
30 X 56 to 34 X 56				
34 X 58 to 34 X 60	1		- 1	
36 x 60 to 40 x 60				
6 x 8 to 10 x 15	12.00	11.00	10,001	25
Double Strength. 6 x 8 to 10 x 15	13.75	11.00 12.50 15.75	11.75	10.50
18 X 22 to 20 X 36	17.25	17.75	14.50	
26 X 28 to 24 X 36	21.00	18.50	15.75	
		21.25	17.25	
	23.25	22.50	19,25	
30 X 52 10 30 X 51	24.00	25.00	21.75	
30 X 52 to 30 X 51	24.00 25.75 27.75	27 75	24.00	
30 X 52 tO 30 X 54 30 X 56 tO 34 X 56 34 X 58 tO 34 X 56	24.00 25.75 27.75 29.25	27.75	27-75	-
30 X 52 TO 30 X 54	24.00 25.75 27.75 29.25 33-25	30.00	control P.	or all
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90 X 52 10 30 X 53 30 X 56 to 34 X 56 34 X 56 to 34 X 66 35 X 60 to 40 X 66 An additional to per cent, v glass more than 40 inches wid- inches in length and not makin inches, will be charged in the 84	24.00 25.75 27.75 29.25 33.25 will be de. Al	go.cole char e char e char e char d inch	s abov n 81 ur es brac	cket.
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	24.00 25.75 27.75 29.25 33.25 will be de. Al	go.col e chai il sise re tha d inch		

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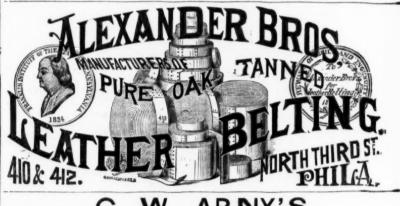
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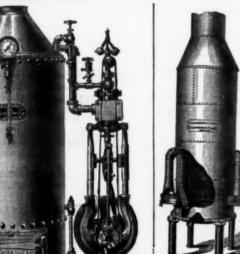


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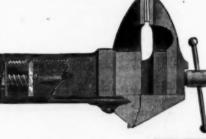


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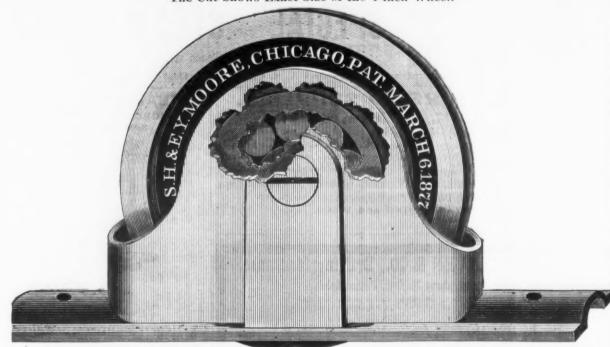






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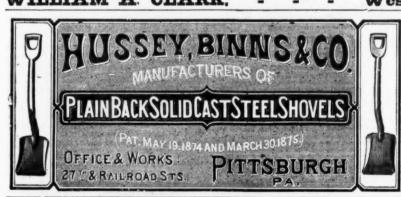
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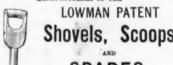
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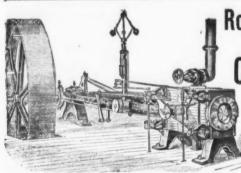
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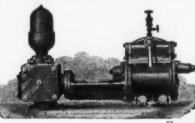
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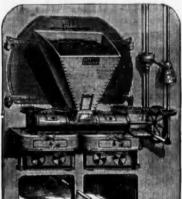
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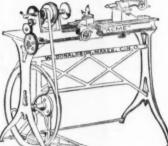
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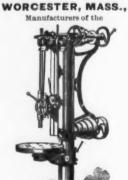
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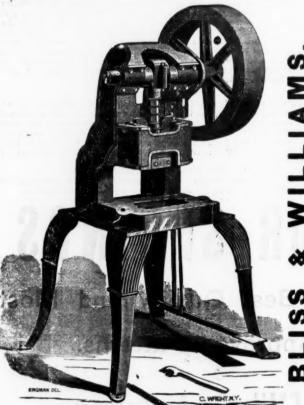




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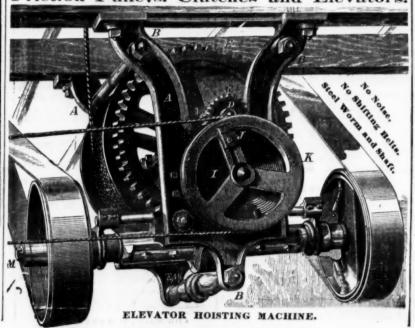


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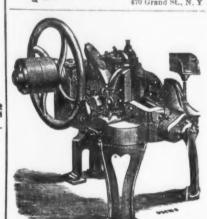
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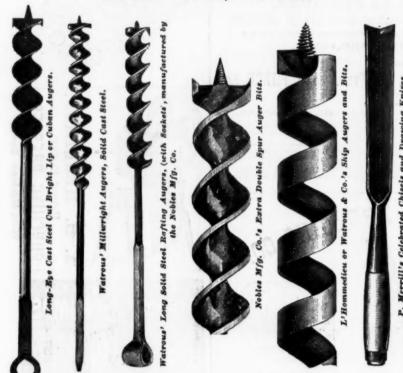
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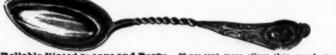
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